THE IRON AGE

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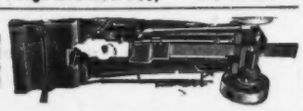

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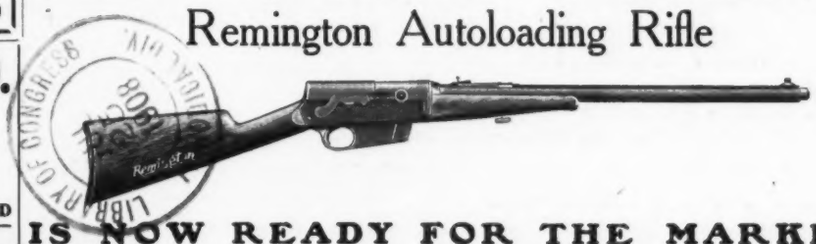

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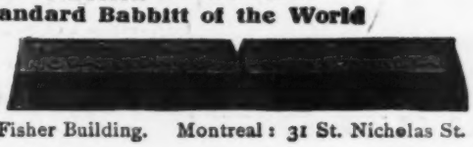

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THE IRON AGE

New York, Thursday, July 23, 1908.

The Hamilton Coke Storage Machine.

A departure from the usual method of handling storage coke has been made in a machine invented by William E. Hamilton and built by the Hamilton Mfg. Company, Columbus, Ohio. The machine illustrated is one installed in the yards of the Illinois Steel Company, at Stockton, Ind. Fig. 1 shows the machine at work on one end of the storage yard, which has a capacity of about 100,000 tons, loading coke from a strip or siding 100 ft. wide, extending along the railroad track about ½ mile. Fig. 2 is a plan diagram, which gives a clearer idea of the manner of using the machine.

Since coke is very friable, and it is necessary to deliver the coke to the furnace in large pieces, the use of a grab bucket or a steam shovel is avoided where it is possible to do so, because either one breaks up the coke considerably. The scraper conveyor of this machine, moving at a slow speed, mechanically takes the coke from the base of the pile without breaking it, and the conveyor is filled by the coke rolling down from the 35-ft. pile that is shown in Fig. 1. The coke is screened at the end of the delivering conveyor.

In one run of 4¾ hr. there were loaded 24 steel hopper bottom cars, containing in all 732 tons of coke. Three men operated the machine at a cost of $7 per day for wages, making the cost per ton for loading less than 1 cent. The cost of loading this material by hand, which was formerly done to prevent breakage, is 19 cents a ton. The operation of the machine required an average of 20 hp., supplied in electrical current at, say, 30 cents an hour. Adding this to the labor cost gives a total actual cost of 1½ cents a ton for the coke loaded. This means a saving

Fig. 1.—The Hamilton Storage Machine Loading Coke from the Stock Pile.

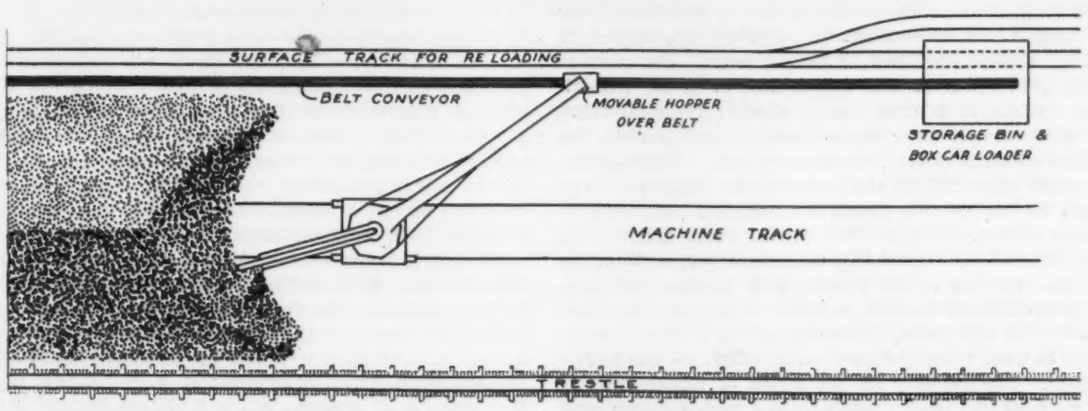


Fig. 2.—Plan Diagram of the Arrangement and Use of the Machine.

over hand loading of about $125 on the day referred to, exclusive of the charge for depreciation.

Aside from this, the machine delivers the coke into the car in very much better condition than is done even by hand loading, and it is estimated that a saving of probably 5 per cent. will be made on this point alone. Coke on the yard costs about $5 a ton, and counting this saving at 25 cents a ton, the machine in handling 100,000 tons will save its cost in a year's time. Its first cost is much less than the cost of a traveling bridge, and it is claimed to have four times the capacity of a locomotive crane and grab bucket.

The machine also stocks the coal in the yard, and here the same contention with regard to breakage is made. The coke is dumped on a platform from hopper bottom cars on the trestle, the nose of the machine being swung underneath the trestle; the delivery conveyor stocks the coal at the apex of the pile, which may be as high as 40 ft. if desired. The common method of putting coke into storage has been to dump a train load of coke in the yard, jack up the track on top of the coke, and to continue this operation until the grade the track takes to the top of the pile prohibits further storage. In doing this every 3 ft. of the pile is successively pounded down by a locomotive and train of loaded cars, and the coke thereby suffers in value for furnace use. This machine delivers the coke to the top of the pile without any drop, as the delivery conveyor may be raised or lowered to suit the hight of the pile. When the pile has reached the desired hight the machine moves by its own power a few feet further down the platform.

Among the other points claimed for the machine is that of no investment in plant aside from the machine itself, the track on which it runs and the trestle or conveyor belt at the side of the yard. When additional storage is called for the extension of the track and trestle is all that is required, for the machine moves as it builds or reloads the pile all along the length of the platform. In other words, it is declared to have the elasticity of a locomotive crane and the capacity of a traveling bridge, without the limitations of either.

New Thermit Reactions.

Before the German Bunsen Society, Dr. Hans Goldschmidt of Essen, a. d. Ruhr, the inventor of thermit, spoke on thermit reactions, which he defined as such action of one or several reducing metals or metal alloys on a metallic compound, that the mixture, ignited at one point, continues to burn by itself, so that a fluid slag is formed, the active element being completely oxidized. The reduced metal is segregated as a regulus, free from the reducing metal. The cerium group of metals act like aluminum, a fact established by Professor Muthmann of Munich. Silicon, however, does not act in the manner indicated, in spite of the statements of some investigators. While it is true that a similar reaction takes place with certain more highly oxidized compounds, the resulting metal is never free from silicon. When metallic calcium appeared on the market, the suggestion was obvious, to employ this metal for reducing purposes. It was soon shown, however, that calcium, like magnesium, cannot be used for technically satisfactory reduction, because the reaction is too violent, and because the slag, CaO, is too difficult to melt in order to permit of a clean separation of the metal. Conditions are different when calcium is used in conjunction with silicon as the reducing agent. The rapidity of the action of the calcium is greatly moderated by the much more sluggish silicon, and a readily fusible slag of silicate of lime is formed at the same time. By a long series of tests the limits were determined within which an alloy or mixture of calcium and silicon furnishes technically useful reactions.

Aluminum acts like silicon upon the speed of reaction of calcium, and a combination of the three, silicon, aluminum and calcium, yields good separation of metals. Magnesium may be substituted for calcium with similar success. Experiments showed that an alloy of calcium and silicon may not only be obtained by melting the two together, but also by heating silicon and lime together. Silicon reduces lime, forming a silicide of calcium, with about one-third of calcium and two-thirds of silicon. This silicide is not affected by exposure to air, has a brilliant fracture, and has a specific gravity of about two. Besides being used as a reducing agent, this alloy may be advantageously employed in the steel industry for deoxidizing the bath in the place of aluminum or of magnesium. The chief advantage is compared with aluminum and magnesium that a readily fusible slag is formed (melting at about 1350 degrees Celsius), which rises to the surface readily and completely. Besides, it is possible with this silicide of calcium to lower the sulphur contents of the steel considerably which is of importance in the case of special steels.

An English University Confers an American Degree.

A novel and charming ceremony took place at Liverpool on July 2, the circumstances being the following: Last June the Board of Trustees of Lehigh University, of South Bethlehem, Pa., voted to grant to Horace Field Parshall, of London, England, the honorary degree of Master of Science, which is the highest honorary degree Lehigh gives to its alumni. Mr. Parshall is an American, a graduate of the electrical course at Lehigh in 1887, and a very eminent electrical engineer. Important duties before a Parliamentary commission in London made it impossible last June for him to come to this country to receive the degree. It was then that the faculty of Lehigh University decided upon the novel plan, which in substance is to authorize by power of attorney a foreign institution to confer the honorary degree. Through the interest taken in the matter by Sir William Ramsay, perhaps the foremost technical chemist in the world, the University of Liverpool, an institution devoted to technical teaching, was selected to act as the representative of Lehigh University in conferring the degree.

When the matter was brought to the attention of A. W. W. Dale, the Vice Chancellor of the University of Liverpool, it impressed him so favorably that it caused him to remark in his letter to Dr. Henry S. Drinker, president of Lehigh University, accepting the duty: "So far as I am aware no precedent or parallel for such an act can be found in the history of British Universities. But it is our business to make precedents as well as to follow them, and we trust in so doing our act will be regarded as an expression of fellowship and sympathy with kindred institutions carrying on similar work, established for similar services, and bound to us by many ties."

American Iron and Steel Institute.

There has been issued in pamphlet form the constitution, by-laws and the list of officers and members of the American Iron and Steel Institute, which was formed as the outgrowth of the Gary banquets last winter. There is little in the pamphlet which defines more definitely than has been done hitherto, the aims and scope of the new organization, except that article VIII states that the standing committees shall be: a Committee on Foreign Relations, a Committee on Statistics, a Committee on Improvement in Methods and a Committee on Membership. Each of the first three committees consists of five members, who do not appear to have been named, while the Committee of Membership consists of nine members, including the president, the present incumbents being Elbert H. Gary, chairman; E. A. S. Clarke, William E. Corey, E. C. Felton, Willis L. King, Samuel Mather, Charles M. Schwab, Powell Stackhouse, and John A. Topping. There are now 163 members of the Institute, of whom 43 are connected with the United States Steel Corporation.

The Government has filed a petition in the Jamestown Exposition litigation, setting forth its prior claim on the assets of the exposition company on account of a balance of $897,953 on the $1,000,000 loan to the exposition. This debt, the petition claims, is a first lien under the special statute appropriating the loan.

Boiler Manufacturers' Convention.

Twentieth Annual Meeting at Atlantic City.

The twentieth annual convention of the American Boiler Manufacturers' Association was held at the Marlboro-Blenheim, Atlantic City, N. J., July 14, 15 and 16. First Vice-President T. M. Rees, Pittsburgh, presided over the opening session. He referred in his remarks to the work of the association in bringing before State and national authorities the sentiment of the trade in favor of improvement in inspection of boilers and a revision of regulations covering their construction and use. He congratulated the association upon the action of President Roosevelt in appointing a commission on the revision of laws relating to the safety of life at sea, the association having long sought to have such a commission created.

At the Tuesday afternoon session Col. E. D. Meier of the Heine Safety Boiler Company reviewed the work of the association in its endeavor to obtain a higher grade of boiler plate with reduction of the phosphorus and sulphur contents, also its part in the movement for uniform boiler inspection laws. From the revision of the national marine inspection laws, now well under way, excellent results are expected.

William L. Hirsch of the Carnegie Steel Company, Pittsburgh, spoke from the standpoint of the steel manufacturer. He referred to the improvement already made in the quality of boiler steel from the study of chemists and metallurgists in recent years, and said that manufacturers are ready to take a forward step whenever this is practicable to meet not only the demands of the domestic trade, but to enter more largely into foreign markets. As an example of the importance of heat treatment in the manufacture of steel, he said he had seen steel plate bent cold flat on itself without injury, and the opposite end of the same piece heated to a cherry red and bent flat without fracture. But the same piece of steel when heated to about 500 degrees F. and bent flat will crack like glass. The speaker answered the question why it is more difficult to reduce phosphorus and sulphur to a minimum in acid steel than in basic steel.

A discussion followed, participated in quite generally, in which various causes of imperfections in boiler steel were alluded to, including variation in rolling, segregation in the ingot, the percentage of sulphur, &c.

Uniform Boiler Specifications.

At the Wednesday morning session the Committee on Uniform Boiler Specifications presented its report through Col. E. D. Meier, the chairman. The appointment by President Roosevelt of a commission on the revision of laws relating to the safety of life at sea was spoken of as the culmination of the association's efforts, beginning with the convention of 1901 at Buffalo. The Massachusetts law relating to boiler construction was reviewed at length and commended in the main as a pattern for other States. One anomaly was pointed out—namely, permitting open hearth flange or boiler steel for the combustion chambers and furnaces and prohibiting it for shells, drums and butt straps. The committee made inquiry on this point and was told that the provision is a temporary one, the intention being to eliminate open hearth flange steel altogether and insist on the use of firebox and extra soft steel. The committee thinks steel castings are given more prominence in the rules than they deserve, in view of the losses sustained by boiler manufacturers through the porosity of such castings. But cast iron is eliminated from boiler work in a number of parts and wrought or cast steel specified, so that the best practice will soon leave wrought steel only. The committee had protested to the Massachusetts Board of Boiler Rules against the paragraph regarding drilling of rivet holes and tube holes, believing that much more accurate work can be done by punching and then reaming than is possible on a drill press. A series of tests was recommended which it was believed would show that good punching, with after reaming to make smooth surface and remove burrs, is first-class workmanship for boilers. The committee believes that a material which has to be so gingerly treated that it cannot be punched with safety is not fit to go into a boiler.

In the discussion of this report the question of proper limits on boiler pressures came up, and the point was made that if the diameter of boilers is to be limited (the Massachusetts rules making 84 in. maximum for externally fired boilers) there should also be a limit on working pressures.

Uniform State Laws Advocated.

H. J. Hartley of the William Cramp & Sons Ship & Engine Building Company, Philadelphia, read a paper on the "Necessity of Uniform Laws Governing Construction and Inspection of boilers." The writer had sent out letters of inquiry and had replies from 39 states saying that no State laws existed governing the inspection of boilers. Five have laws, and in some other States there are inadequate provisions embodied in factory inspection laws. The paper referred to the prominent features of the municipal regulations in New York and Philadelphia and reviewed the new Massachusetts law. While it has been considered impracticable under our form of government to secure uniform inspection regulations throughout the various States and develop such an efficient system as obtains in Germany, the speaker believes that the functions of the Department of Commerce and Labor could be extended to cover the execution of a national uniform boiler inspection law similar to that now in force in the marine service.

A discussion followed in which the confusion resulting from the present diversity of specifications in vogue in different parts of the country was spoken of as a great drawback. George Hartley spoke from the standpoint of the large buyer, being connected with a company which has about 275 boilers in different parts of the country. Manufacturers bidding on work in different States are often very much at sea because of the diversity of requirements.

The Proper Working of Rivets.

At the Wednesday afternoon session topical discussion was the order. D. J. Champion, Cleveland, Ohio, referred to the fact that wrong methods are often responsible for complaints as to rivets. An important piece of advice is never to drive a rivet except on a rising heat and finish it before it becomes dark blue. Being asked whether it would be possible for rivet manufacturers to advise their customers as to the highest heat a particular rivet would stand, the speaker said that he had not carried on any experiments which would permit an exact answer, but the general rule is that rivets must be worked while they are coming, not while they are going. This was corroborated by a member, who said that if a piece of boiler sheet is heated from a slight heat up to blue heat it can be flanged, but if the same piece has been heated up to regular flange heat and then allowed to fall back to blue heat it will break in working.

E. M. Wilkinson said that boiler manufacturers should do more in the direction of preventing smoke, and suggested that the Dutch oven might serve as a groundwork for a practicable solution of the trouble. He favored the adoption of a standard depth from the grate line to the shell in boiler fronts, in the case of horizontal boilers, especially where bituminous coal is used. The majority of manufacturers make their fronts so that the grate line will be on a level or within 2 ft. of the shell of the boilers, so as to reduce the cost of the fronts. With the majority of Pennsylvania coals this distance is not enough. In two boilers recently installed, of 200 hp. each, the distance from grate line to the bottom of the shell, which had been 26 in. in the boilers replaced, was increased to 40 in. The difference in the amount of smoke made and the saving in fuel were pronounced. The speaker thought that a 48-in. space would give still better results.

The legal aspects of a federal boiler inspection law were taken up for consideration. The opinion was expressed that this is a subject for State regulation and that federal control could not be had over land boilers. It was felt by some members that the question would need to be handled by agitation and by impressing the sense of the trade upon the authorities of the different States with a view to securing uniform legislation.

Hight of Stack.

The question of relative hight of boiler stacks in different altitudes was raised. It was said that both the grate size and the horsepower must be taken into consideration as well as the altitude. Colonel Meier has followed the rule of about 8 per cent. additional hight of chimney to over 1000 ft. of altitudes. Enlarging the grate area will not answer unless the necessary hight is obtained. Mr. Wilkinson said that with a boiler developing 200 hp. and requiring a stack 100 ft. high with natural draft, the hight could be cut down to 65 ft. with forced draft and give better results. The case was cited of boilers developing 950 hp. at Pittsburgh where two stacks too care of four boilers with induced draft. The stacks, which were 135 ft., were found to be too high and were cut down to 90 ft. The fans were taken out and more horsepower developed than required. Using forced draft with a very large stack forces a larger volume of air into the stack than it is able to carry and the gases become chilled. Mr. Hartley said that while it is true a stack can be too large, generally the mistakes are the other way For stationary work he added one-quarter to the area of the tubes and never had any trouble with the size of stacks.

The question was asked whether a round or a square stack is preferable, and it was answered that a round stack is the perfect shape, as can be shown by permitting a column of smoke to ascend through a glass retainer. It will be found that the smoke does not stain the corners.

Iron versus Steel.

The Thursday morning session was marked by a discussion on the comparative advantages of iron and steel. R. H. Bate believed iron rivets properly driven are better for light work and repair work, arguing that they upset better in the hole. A great quantity of poor work is done in boiler shops, he said, because of defective holes, and this is avoided by punching with a rack. The practice in the speaker's shop had been to drive rivets at a white heat, though he knew many did not heat rivets up to that point. The speaker preferred iron to steel tubes, provided they can be had at the same price. He did not see that there had been any improvement in tubes.

Geo. N. Riley said that his company, the National Tube Company, is governed by the demands of the trade in the use of iron or steel tubes. The drift at present seems to be toward steel. The navy has adopted steel and the railroads are specifying steel, both seamless and lap welded. Mr. Rees said that he had been known at one time as a crank on iron rivets, but had been converted to steel. He was astonished at the advance made in their quality and effectiveness. In all his experience the speaker had not had flues as good as those he is using to-day, of any of the makes of cold drawn tubes. They will turn over without a crack, and, so far as his experience goes, they are superior to those of the old days.

New Officers.

At the banquet Thursday evening Col. E. D. Meier, president-elect, was toastmaster, and responses were made by Charles M. Schwab, the guest of honor, and by T. A. Daly, James G. Mitchell, E. M. Wilkinson, F. M. Campbell, George Slate and W. O. Duntley. Mr. Schwab prophesied that 10 years hence steel production in the United States would treble the present figures. He referred to the co-operation now more common than ever among manufacturers, and said that the steel manufacturers of the country desired to treat all alike and see that the large buyer pays as much as the small one for the same product.

Detroit was chosen as the place for the convention of 1909. The following officers were elected:

President, E. D. Meier, New York.

Secretary, J. D. Farasey, Cleveland, Ohio.

Treasurer, Jos. F. Wangler, St. Louis, Mo.

First Vice-President, T. M. Rees, Pittsburgh, Pa.

Second Vice-President, J. Don Smith, Charleston, S. C.

Third Vice-President, W. A. Brunner, Phillipsburg, N. J.

Fourth Vice-President, H. D. McKinnon, Bay City, Mich.

Fifth Vice-President, M. A. Ryan, Duluth, Minn.

The associate members and supply men re-elected the following officers: W. O. Duntley, Chicago, president; J. T. Corbett, Chicago, vice-president; W. H. S. Bateman, Philadelphia, secretary; H. B. Hare, Cleveland, Ohio, treasurer.

An Important Ruling on Industrial Switching.

The Interstate Commerce Commission has made a report of far reaching importance on the question of "industrial switching," which was discussed in an editorial in *The Iron Age* of June 4, page 1796, entitled "Terminal Railroads at Iron and Steel Works." The case of the General Electric Company vs. the New York Central and the Delaware & Hudson railroads is the one on which the ruling has been made. In 1906 these railroads discontinued an allowance which they had made for a number of years to the General Electric Company for switching service performed by the company on terminals which it had provided at considerable expense. Section 15 of the Interstate Commerce law authorizes carriers to pay a shipper for any service he performs or for any "instrumentality" which he furnishes in connection with transportation, and gives the commission the power to fix a maximum rate or charge. The General Electric Company filed its complaint, and asked the commission to order the payment by the above carriers of a reasonable rate for switching. The commission has summarized its ruling as follows:

1. Where a manufacturing plant has so increased in size as to require within the plant inclosure 12 miles of broad gauge switching tracks and seven miles of narrow gauge electric tracks for the prompt, successful and economical operation of the industry, and with its own motors, engines and crews does a vast amount of purely internal switching, which would be seriously interfered with by the switching engines of the railroad if permitted access to the plant, and has on that account assumed charge also of the in-and-out switching and spotting theretofore done by the railroads; held: That it is not entitled to compensation from the railroad companies to cover the cost of the movements of loaded and empty cars between the interchange tracks and certain shops, foundries and other buildings within the inclosure.

2. Common carriers are under no duty to extend their transportation obligations with the extension of great industrial plants, and to accept and deliver cars within the inclosure over a network of interior switching tracks constructed as plant facilities to meet the requirements of the industry.

3. On the facts of the case, held: That the complainant does nothing within its plant inclosure which it can lawfully call upon the defendants to do for it, and therefore nothing for which it may lawfully demand compensation. Under the circumstances shown of record the obligation of the defendants to complainant involves only an acceptance and delivery of cars at some reasonably convenient point of interchange.

4. The commission has no power either to enforce the specific performance of contractual obligations or to award damages for the breach of such agreements between carriers and shippers.

Following this ruling the commission has dismissed a similar complaint by the Solvay Process Company against the New York Central and the Lackawanna roads. In both of these cases the internal switching from one building or department to another had grown to such proportions that it would be unsafe and impracticable for railroad switching crews to work in the plants, and the necessities of the industries are so exacting that they could not await the convenience of the railroad to perform the in-and-out service and spotting of cars. In both of these cases the industrial switching was undertaken voluntarily by the industries. A similar complaint was filed some time ago by the Buffalo Union Furnace Company, Buffalo, N. Y.

The commission, it should be noted, has not held that it would be illegal for the railroad to pay a switching allowance. It has merely refused to order such payment where the railroad resists the demand. The orders in these cases do not make illegal or affect in any manner the status of hundreds of other large industries where railroads make allowances for industrial switching. An order by the commission on a specific complaint does not establish any general rule.

The Climax Spur Gear Chain Block.

A patent has recently been granted to the Climax Hoist Company, 1753 North Howard street, Philadelphia, Pa., on a new spur geared chain block, an exterior view of which is given in Fig. 1 herewith and details of construction and operation in Fig. 2. Excellent efficiency and durability are the two principal contentions made for

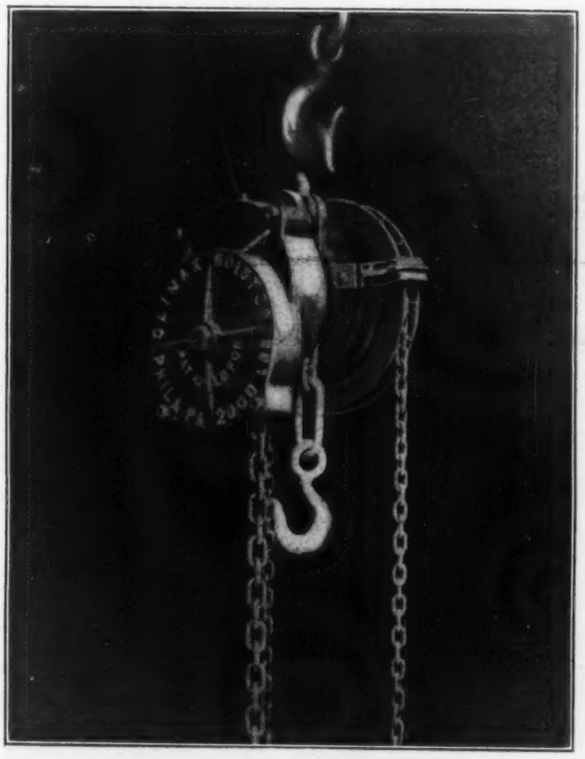


Fig. 1.—A 1-Ton Climax Spur-Geared Chain Block.

the block; it is also claimed to be low in cost and to be of considerable advantage in that the load is carried on hardened and ground steel rollers. It is this latter fact which is largely responsible for the high efficiency, 80 per cent. The gears are all enclosed in a dustproof case and run in an oil bath, and the hoist is remarkable for

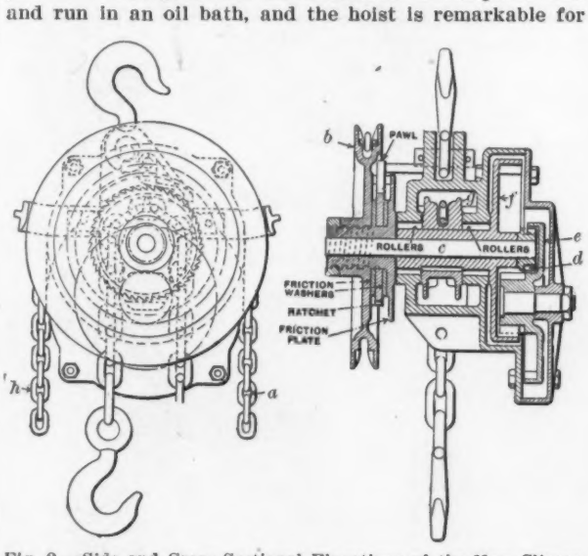


Fig. 2.—Side and Cross Sectional Elevations of the New Climax Chain Block.

its small number of parts, all of which are interchangeable, being made to jigs and of standard sizes.

The action of the block can be understood from the side and sectional elevations given in Fig. 2. Pulling on the side *a* of the hand chain causes the hand chain wheel *b* to revolve the driving shaft *c*; this shaft carries a pinion, *d*, which meshes with an internal gear, *e*. The latter is mounted on a stud and is integral with a pinion meshing the internal gear *f*, which is the load gear, this gear being mounted on a quill carrying the load wheel *d*. The lowering is accomplished by pulling on the side *h* of the hand chain, which action releases the friction brake and permits the load to descend. The retaining brake is of the company's own design, and is declared to be absolutely secure, smooth and noiseless in operation. The chains are specially made for the company and are claimed to be of a very high grade of iron.

The hoist is made in seven sizes, from 1000 to 10,000 lb. capacity, and ranging in standard lifts from 8 to 12 ft. Greater lifts can be had on order. The smallest block weighs 68 lb. and the largest 390 lb.

Customs Decisions.

The Treasury Department has decided to acquiesce in a recent decision of the United States Circuit Court of Appeals at Philadelphia relating to so-called arched Purves furnaces. The Government conducted a long litigation to compel importers to pay duty at 2½ cents per pound under the tariff provision for welded cylindrical furnaces made from plate metal. F. B. Vandegrift & Co.'s claim that the furnaces are in reality "flues," dutiable at 2 cents per pound, was sustained by the appellate tribunal.

Another acquiescence on the part of the Government to suits won by importers relates to crude hematite ore, which was returned for duty at 30 per cent. as a "pigment." Francklyn & Ferguson were sustained in the claim that the commodity is iron ore, with a duty of 40 cents a ton.

The Board of United States General Appraisers has decided that ornamental metal stands, made to hold boxes of safety matches, do not fall within the provision in the Dingley tariff for "smokers' articles." The Jordan Marsh Company, Boston, have been sustained in their objection to the action of the Custom House authorities in fixing a 60 per cent. duty, and their claim that the articles should be admitted at 45 per cent. as manufactures of metal.

In sustaining a claim filed by C. H. Wyman & Co. of St. Louis, the board held that there is no reason why an importer should not be relieved of the burden of additional duty when by a clerical error he enters his invoices too low. The merchandise in question consisted of steel wire.

The Board of United States General Appraisers decides that specially prepared woven belting used for the transmission of power to machinery is dutiable under the provision in the tariff for "manufactures of wool" at the appropriate rates according to value. Thomas Meadows & Co., New York, had objected to the action of the customs authorities in classifying the merchandise as "beltings of wool," at the rate of 50 cents per pound and 60 per cent. ad valorem. The belting is composed of vegetable fibres and wool, impregnated with a waterproof adhesive cement containing tar and edged with a raw hide cord. The decision points out that all of the articles provided for in paragraph 371, which includes belting, are wearing apparel and articles of luxury, and that to include machine belting in this category is contrary to the spirit of equity.

The Clark Car Company, recently incorporated under a New Jersey charter, with a paid in capital of 50,000, has established offices at 1468 Frick Building Annex, Pittsburgh. It will build steel box and dumping cars of special designs and motor trucks. Its officers are the following: Charles H. Clark, president, formerly chief engineer of the Tennessee Coal, Iron & Railroad Company; Geo. E. Slater, secretary, and Justin R. Swift, treasurer.

Colne & Co., 11 Broadway, New York, formerly Powell & Colne, contractors for the erection of Tropenas steel casting plants, have completed an equipment at the Mare Island Navy Yard, California, which is now in successful operation. This makes 33 converters installed by this firm. As a sign of revival of business Colne & Co. report several inquiries lately from existing and contemplated foundries.

A German Automatic Screw Machine.

The machine shown is built by Hans Richter, Berlin, Germany, for automatically producing screws, nuts and general profile work from rods of any kind of metal. To do this work four independent turning tools, a boring tool and a tap are used. One workman can serve six such machines, as his work consists principally in replacing worked-up rods. Fig. 1 is a top view of the machine in which the principal mechanism is quite clearly revealed; Fig. 2 is a front view showing the working parts and Fig. 3 a near view.

Referring to the first illustration, the spindle *a* is glass hard and runs in bronze bearings. At the front end it is provided with a chuck to take in rods from about 1-32 in. up to the full diameter of the spindle bore.

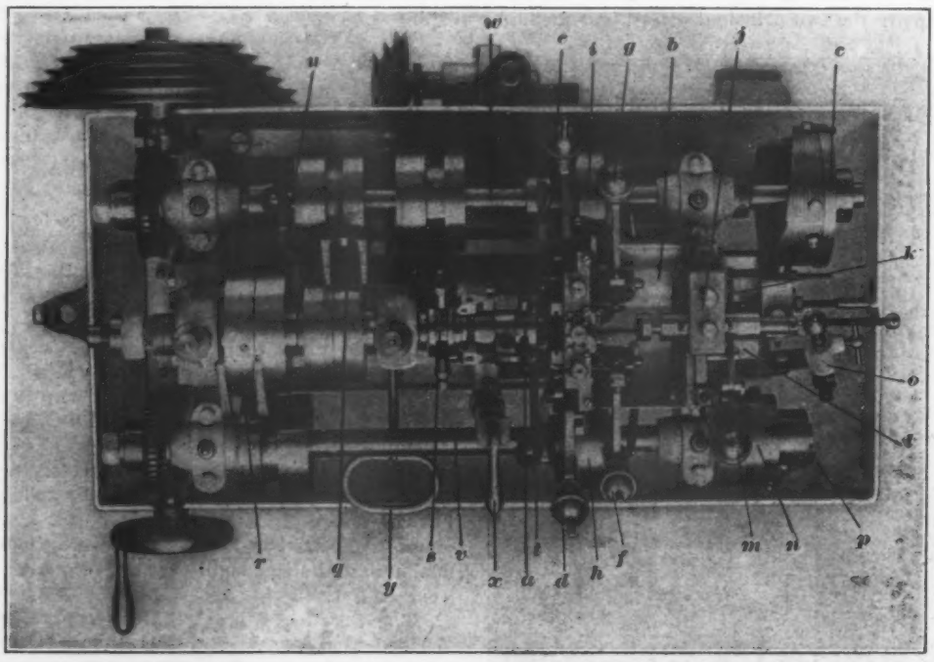


Fig. 1.—Top View of the Richter Screw Machine, Showing the Working Parts.

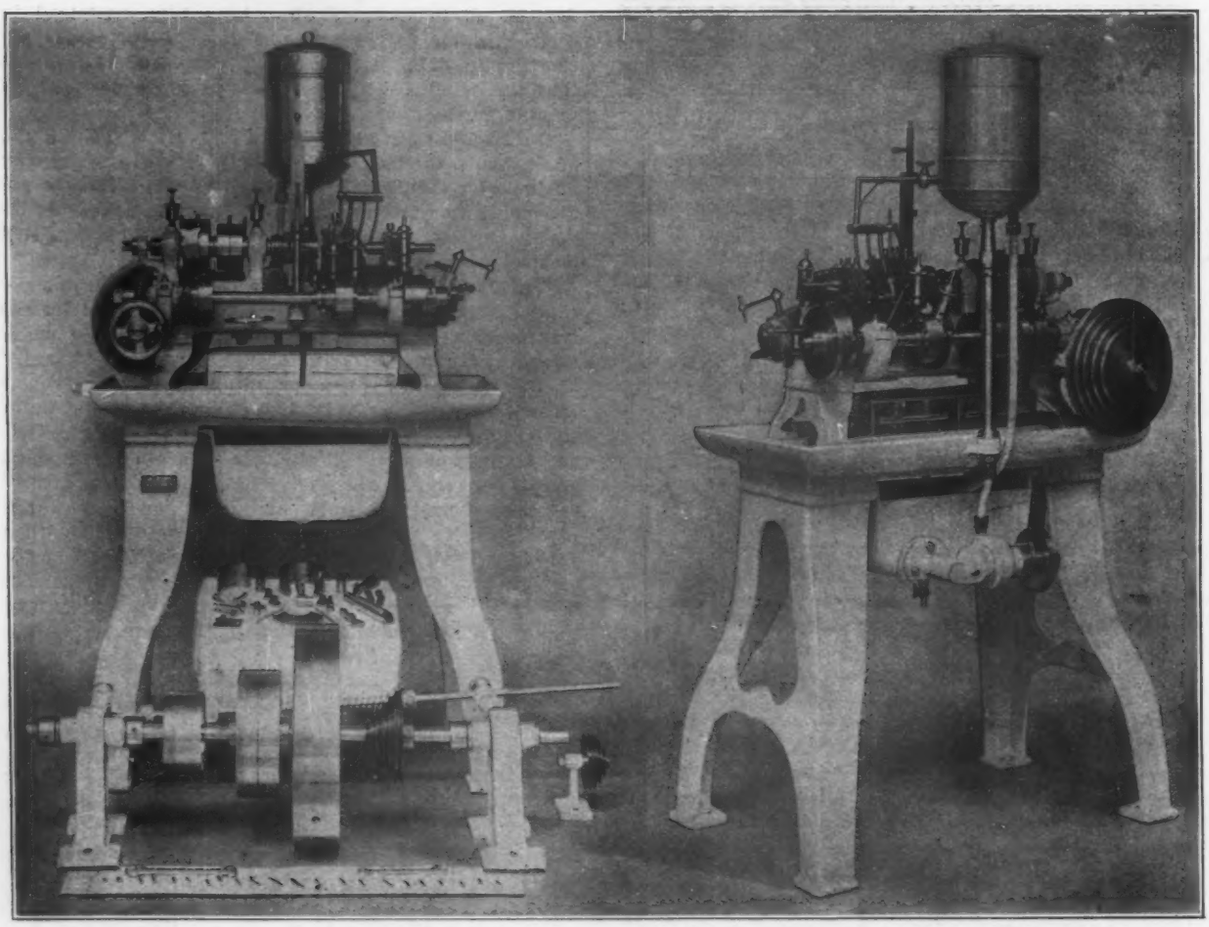


Fig. 2.—Front View or Working Side.

Fig. 3.—Rear View or Driving Side.

A New Automatic Screw Machine Built by Hans Richter, Berlin, Germany.

There are three sizes of this machine, their dimensions being as follows:

	No. 1 Inches.	2 Inches.	3 Inches.
Spindle bore	1¼	⅞	½
Greatest diameter of screw	⅝	7/16	¼
Greatest length of screw	3⅛	2⅛	1 7/16
Turns up to a length of	3 15/16	2¾	1⅝

The machine illustrated is the smallest of the three sizes.

The tools are held in a carriage, *b*, Fig. 3, that slides on the profile cam *c*. The levers *d*, *e*, *f* and *g*, which work independently of each other, serve to hold the tools fast. By means of eccentrics on the parts *h* and *i*, the levers are brought into action in a manner corresponding to the shape and character of the piece being made, either one after another in any desired order, or any two or three together, or all four together.

On the main slide *b* travels the cross slide *j*, in which the boring tool *k* and the tap *l* are adjustably held. The lever *m* actuates the cross slide by means of the profile cam *n*, from the axial line of the boring spindle to the middle of the threading tool, so that when a hole is bored, the threading tool comes in line axially and cuts the thread in the bore, or it can also cut an outside thread. The lever *o* presses the boring tool (or the threading tool, as the case may be), by means of the profile cam *p*, against the work piece. The tight pulleys *q* and *r* act alternately in thread cutting.

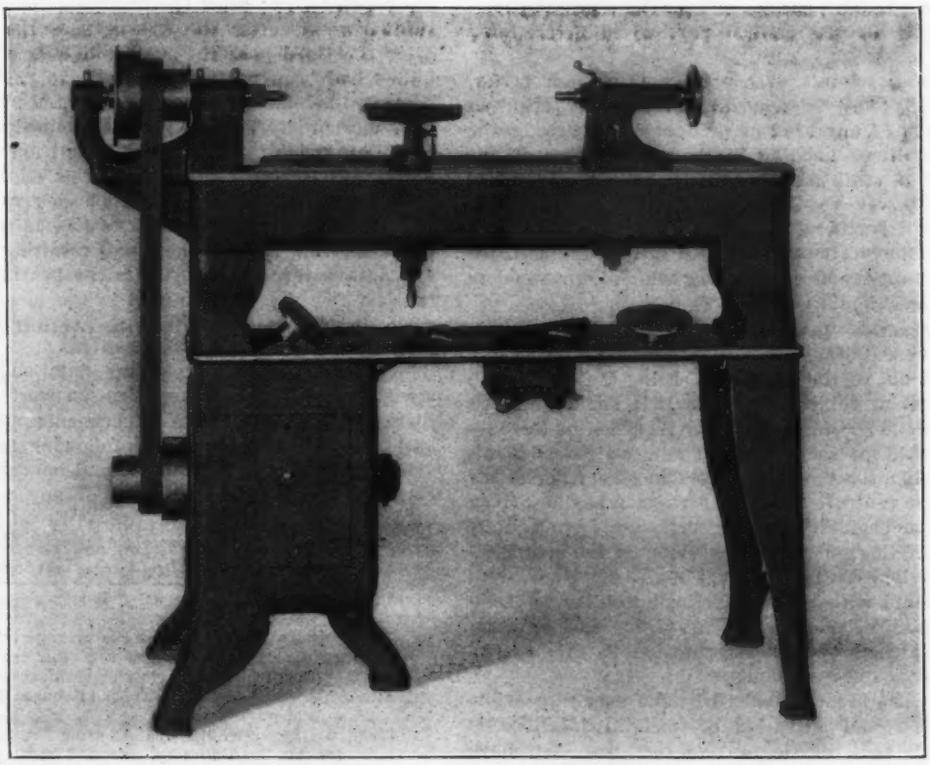
When the piece is cut off, the chuck *a* is opened by the lever *s;* at the same time, the lever *t* strikes a dog and holds the material tight in the chuck. The driving belt fork *q* is in the idle position during the shifting of the rod, and at the same time the lever *u* brakes the spindle. The slide *b*, with the material, is then drawn back by means of a spring to an adjustable dog, which fixes the length of the piece made.

The various cams are actuated by two shafts *v* and *w*, journaled on the two sides of the bed. These shafts are driven by worms which can be given any desired speed by means of stepped pulleys. A hand wheel serves for starting. The handle *x* is used for temporarily throwing out the cam shafts. The automatic throw out mechanism *y* comes into play when the material is worked up clear to the chuck jaws. Of each rod about 2½ to 3 in. remains unworked.

Improvements at the Sligo Rolling Mills.—The Sligo Iron & Steel Company, with sales offices in the House Building, Pittsburgh, and mills at Connellsville, Pa., is remodeling its plant and making improvements which will increase its efficiency and capacity. The machinery will be electrically operated, two large transformers and a trolley line 1000 ft. long having been installed. A crane-way 50 x 180 ft. has been erected, and two new furnaces have been about completed. Pipe lines throughout the plant have been changed, and an innovation in connection with the water supply is the use of compressed air for its distribution throughout the plant. The guide mills have all been rearranged, and a Belgian mill has been installed. Instead of the 69-ft. cooling table, one 90 ft. in length has been provided, sufficient to handle any size material in demand. The company has also added two 150 hp. boilers, which will utilize the waste heat from the furnaces. The new electric crane will supplant the old hand method of loading and unloading material and transporting it about the shops. It is equipped with a magnet of sufficient power to carry several tons of rolled material. The improvements will be completed in about a month, and then if business warrants the plant will be placed in operation.

A New Reed Motor-Driven Wood Lathe.

The F. E. Reed Company, Worcester, Mass., has brought out a new motor driven 10-in. wood turning lathe, particularly designed for manual training schools. Its new feature is the use of a constant speed motor, which, as shown in the illustration, is located within an enclosure underneath the bed. The motor shaft is belted to the lathe spindle through three-step cone pulleys, which give a sufficient range of speeds for the purpose. The motor is mounted on four threaded studs, and may be adjusted vertically by means of nuts to give the correct belt tension.



A 10-In. Motor Driven Wood Turning Lathe for Manual Training Shops, Built by the F. E. Reed Company, Worcester, Mass.

One advantage of the location of the motor at the base of the machine is that there is a minimum of vibration there, and there is further benefit in the fact that the motor is not convenient of access to the student and is therefore less likely to be tampered with. The company also builds a lathe of the same general type, with variable speed motor mounted as part of the head, the armature shaft being the head spindle; but this requires more expensive controlling apparatus.

An electric railroad about 10,000 ft. high is being built on the Zugspitze, Bavaria, the highest peak of the Alps. It will run to the summit, and at the 7000-ft. level a hotel will be built.

The Power Required in Rolling Steels.

BY J. A. KNESCHE.

Past Methods of Arriving at Engine Sizes.

When the question comes up "What size engine will be required to drive a roll train on which a given shape is to be finished?" the method often pursued is to see what size engine some one else uses in the manufacture of a similar product, perhaps make a few inquiries about the operation of the train, available steam pressure, &c., and with this information as a basis, fix the size of engine to be used for driving this particular roll train. It will be conceded by most men familiar with the conditions prevailing in different mills manufacturing like or similar products that this is not exact knowledge, although it may be the best knowledge and information available at the time being. This method of fixing the size of rolling mill engines has been used very much in the past, and millions of tons of steel have been worked up in roll trains driven by steam engines, the size of which was thus determined. This speaks well for the steam engine—not necessarily for the method pursued in determining its size.

The purpose of this article is to propose a better, more scientific way to determine the power required for the rolling of any kind of product under any of the different conditions existing in the manufacture of the many kinds of steel shapes. These methods for determining the power required for this purpose may, of course, be still further improved as more accurate data become available. The writer hopes in this article to be able to point out the direction along which improvements of such method should progress.

Present Practice Makes Exact Methods Necessary.

At the present time the steam engine begins slowly to be pushed out of the position of being the only prime mover for driving rolling mill trains. It has done much service in this field, but is no longer regarded as the only power available for such work. The electric driven roll train, receiving the current for its motors from a gas engine electric central station, and the gas engine driven roll train are beginning slowly, but surely, to contest for a share of this service so long done by the steam engine exclusively. With the arrival of these prime movers in this field and with their limitations peculiar to themselves, the need of more exact knowledge and information insuring their successful operation in this special field becomes at once evident.

That this has been recognized by the men responsible for the design and operation of such installations is proved by the fact that in nearly every case they have made unusually careful calculations, often based upon exhaustive tests,* with a view of insuring success from the standpoint of the operating department. However, it will be found on examination that all these tests have covered special cases only; that is, a special product, the rolling of rails or plates, for instance, and to the writer's knowledge no attempt has been made to arrive at such practical conclusions as would permit the application of their data to any kind of product. The problem in the past seems always to have been "What is the average and maximum power requirement to roll a rail or plate of a certain section and length in so many passes?" If it were desired to roll that same shape in more or less passes than were used when the investigation was made, the data obtained during the test would not be applicable to the new case at hand.

Tests of Engines Driving Plate Mills.

The writer had recently the opportunity to make a number of tests during the regular operation of mills on engines driving 21 in. plate mills, made up of three-high roughing rolls, three-high planishing rolls and two-high finishing rolls. The 36 x 48 in. engines are directly connected, have flywheels each weighing from 60,000 to 65,000 lb. and are run noncondensing. All engines with the exception of one were built nine years ago and are of reputable make. The purpose of these tests among other things was to ascertain the power required to roll 0.07 per cent. carbon steel as used in the manufacture of the plates referred to later.

These tests were made with great care and all possible refinements were used that did not interfere with the operation of the mills. Throughout the tests continuous indicators with electric pencil attachments were employed, thus recording every stroke the engine made during the rolling of the piece. A chronograph with electric recording device showed the exact time for all passes, the intervals between passes and recorded also the slightest variations of the engine speed. The width and thickness of piece after each pass were obtained with great accuracy in the following manner: After all the data for the test had been obtained, without making any change on the rolls, billets were passed through them in the regular way; after the first pass the first billet was thrown away, after the second pass the second billet, after the third pass the third billet, &c. When enough billets had been put aside for all the passes, and when these had become cold, the thickness and width were carefully measured. The length was obtained from the original billet weight. Thus the sectional area was obtained with great accuracy. Of course this method would not have been possible had the billets been very large, because of the great waste of steel. As it was, the waste was practically nil, because the pieces resulting after the first few passes were recharged into the heating furnace and the last few passes were used in the blacksmith shop.

Formula for Determining the Actual Horse Power Required.

Much useful and interesting data embodied in two special sheets for each investigation were obtained from these tests. With these experiments and data as a basis, the writer proposes the following formula for the determination of the average actual horsepower to be exerted at the mill driving shaft of any rolling mill engine:

Formula 1.

$$\text{Average actual hp. developed during passes} = C\left[\frac{(A_b - A_1)L_1 + (A_1 - A_2)L_2 + (A_2 - A_3)L_3 + \&c.}{550\ S}\right] + F$$

where

C = a constant depending on the average temperature maintained during the rolling of a certain material.

A_b = sectional billet area in square inches.

A_1, A_2, A_3, &c. = sectional areas in square inches after 1st, 2d and 3d passes.

L_2, L_2, L_3, &c. = lengths in feet after 1st, 2d and 3d passes.

F = friction load in i.hp. assumed from previous experiments.

S = sum of duration of all passes in seconds.

In order to use this formula in determining the average actual horsepower, the following data should be given:

1. All dimensions of billet, slab or ingot.
2. All dimensions of the final section of the finished shapes.
3. Number of passes.
4. Reduction for each pass.
5. Average temperature at which the steel is to be rolled.
6. Average lineal speed of roll surface.

Discussion of the Above Formula.

The accuracy of the above formula will depend largely on the constant C. This quantity represents the work done in foot pounds during the rolling of one pass for each square inch reduction of section per one foot length of piece. It is at once evident that if we succeed in determining the exact amount of work required to bring about a reduction of 1 sq. in. for a length of 1 ft. we can very easily determine the total work required for any pass, if the reduction is known.

With the exception of the reduction, the work required in the rolling of steel, practically speaking, depends on the nature of the metal and its temperature at the instant of rolling. The writer desires to emphasize the

* See *Power*, June, 1907, p. 370; also *The Iron Age*, January 16, 1908, p. 206, *et seq.*

fact that he is speaking of work and not of power; and in speaking of work, time does not enter into consideration. The higher the carbon contents in the steel the more work will be required to roll that steel; the lower the temperature the more work will be required to bring about a certain reduction. Constant C in above formula was determined experimentally for a steel with carbon contents of from 0.06 to 0.08 per cent. The writer is of the opinion that constants C, as given herein, are accurate enough for all practical purposes for steels containing up to 0.15 per cent. carbon.

The temperature of the steel at the instant of rolling plays a very important part in the determination of constant C. The hotter the steel the softer and more plastic is it and the less work will be required to bring about a certain reduction. As the steel becomes colder more work will be required to bring about the same reduction. According to this idea, as the steel cools in rolling, the general tendency of constant C should be to increase—a condition found true during the tests. The following constants were obtained in the rolling of a plate 0.105 in. by 13.621 in. by 54 ft. 4¼ in., the passes being taken in order from first to last inclusive: 11,900; 10,000; 16,700; 23,600; 26,800; 40,700; 73,000; 257,000. The last constant (257,000) may be regarded as uncertain; it is the constant for the last finishing pass and is much higher than any constant obtained in any other test. However, the writer finds a note recorded on the test sheet, saying that when the data for constant 73,000 were obtained the temperature of the steel was about 2000 degrees F., while the temperature had dropped to 1300 degrees F. when the data for constant 257,000 were obtained; the note concludes by saying that this drop in temperature may be the cause of the enormous increase in work as shown by these constants.

Formula in Foot Pounds Per Square Inch Reduction Per Foot Length.

The temperatures were judged only by the color of the heated steel. This, of course, is not satisfactory; the original intention was to use a pyrometer for determining the temperature of the steel before each pass, and an attempt was made to use a sensitive thermo-couple for this purpose, but no satisfactory results were obtained. The writer, who is familiar with several optical pyrometers now on the market, thinks it might be possible to use the Holburn-Kurlbaum optical pyrometer for any such work that might be undertaken in the future. For the all-important determination of constant C in this formula the temperature of the steel should be known, and it is hoped that some one with a more complete outfit of instruments than was at the disposal of the writer will be able to make investigations which will give us a more exact knowledge of the influence of the temperature on constant C. The following is the formula in foot pounds for this quantity or for the work required for each square inch reduction per foot length of piece:

Formula 2.

$$\text{Constant } C = \frac{W - F}{R\,L}$$

where

W = the total work done on mill driving shaft, or work developed in engine cylinder plus energy paid out by the flywheel. The continuous indicator cards taken during pass furnish one item, and the complete flywheel data and the speed reduction during pass furnish the other item.

F = friction load during pass. The friction load during pass was computed from the i.hp. required to overcome the engine and roll train friction. This is not entirely accurate, because the friction of the roll train is greater during a pass than the i.hp. of roll train, taken with nothing between the rolls, shows. But this error was regarded as small and therefore not taken into account.

R = total reduction in square inches from one pass to next one; or the difference of area in square inches between two consecutive passes.

L = length of steel in feet after pass in question.

The average constant C for a given shape is the sum of all the products of the constants C for the different passes by their respective durations of time expressed in seconds, divided by the sum of the durations of the passes expressed in seconds. This average constant C holds good for the average temperature maintained during the rolling of that steel. The usual custom is to start rolling with the highest practical temperature. Different shapes are completed at different temperatures. Certain bars, for instance, may be completed at an orange heat; certain structural shapes at a light red heat, and certain plates at a dull red heat. The average temperature for the average constant C in the case of these tests was 1900 degrees F., obtained as follows: The temperature at which the steel entered the rolls was between 2300 and 2500 degrees F.; the temperature at which this steel usually was finished was between 1300 degrees F. and 1500 degrees F. The sum of the mean starting and finishing temperatures divided by two was taken as the average temperature, or 2400 plus 1400, divided by 2 equals 1900 degrees F.

Working Out the Average Constant C.

The average constant C, based on five tests made on plates ranging in thickness from 0.105 to 0.259 in., in width from 4¼ in. to 22.1 in., and in lengths from 21 ft. 3 in. to 68 ft 9 in. was found to be approximately 27,000, the extremely high constant of 257,000 mentioned elsewhere in this article not having been included. In accordance with the definition of constant C, the foregoing means that on an average 27,000 ft.-lb. of work must be done in the rolling of 0.07 per cent. carbon steel, during the operation of which the average temperature is approximately 1900 degrees F. This is the average constant for rolling plates of dimensions given above.

In blooming mill work, where the smallest sections seldom are less than 4 x 4 in., and, of course, often much larger, the average finishing temperature is usually, under normal conditions, in the neighborhood of 2000 degrees F. and the starting temperature about 2300 degrees F., judged by color. Here the average temperature becomes 2300 plus 2000 divided by 2 equals 2150 degrees F. and the average constant C should be much lower than the one given for the plates mentioned above. The writer worked out the constants C for the test made in 1907 by F. G. Gasche on a 42 x 60 in. twin reversing blooming mill engine of the International Harvester Company. Here a 2.5-ton ingot was rolled to 4 x 4 in. billets in 21 passes and the average constant C was found to be 14,600.

When we consider that the average finishing temperature of the plates above mentioned is about 500 degrees F. lower than the average finishing temperature of the ingot on the blooming mill table, and, further, that the data from which constant C in the case of the International Harvester Company's test is computed were obtained not with a view of determining the constant C, we seem to be forced to the conclusion that 27,000 cannot be far from the true constant C for the work under the conditions given. Further, if we average the constants C in all the tests up to the point where the temperature becomes about the same as is the finishing temperature under normal conditions on the blooming mill table, we obtain an average constant C of between 14,500 and 15,500, which comes close to the one obtained from the data of the International Harvester Company's blooming mill engine test.

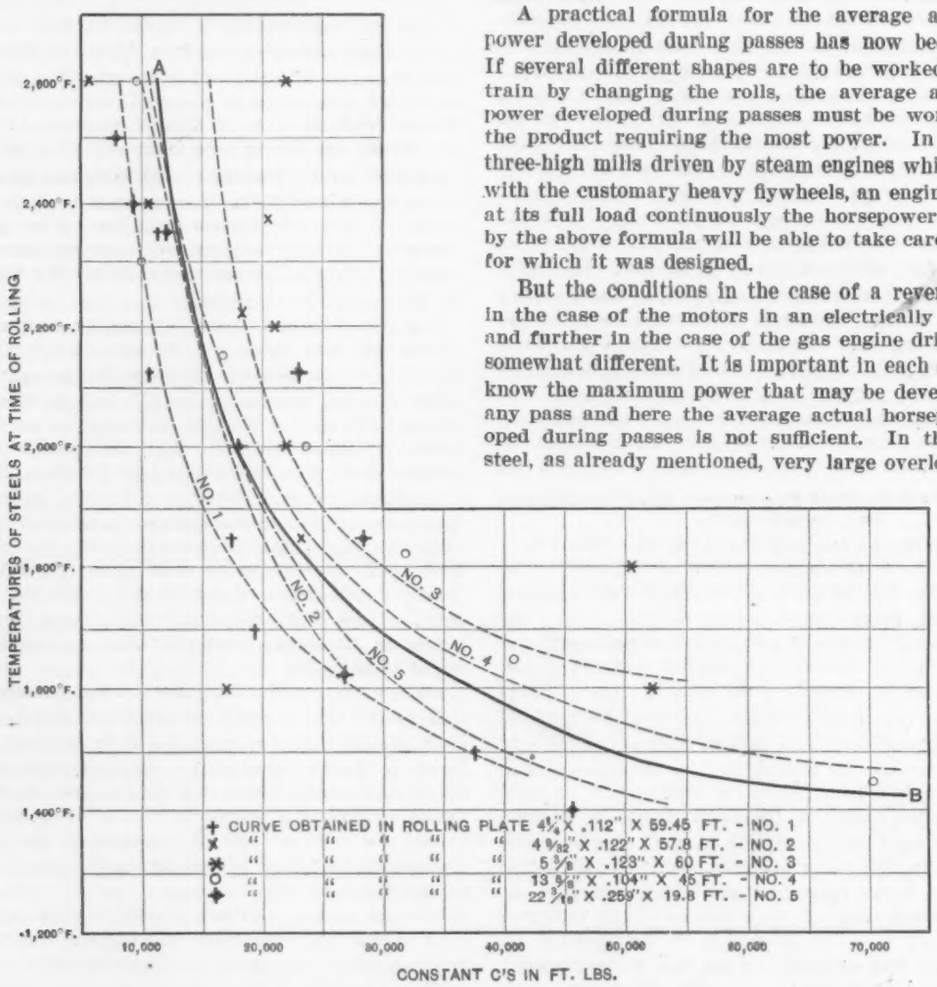
Some time ago the writer discussed with an engineer of a large steel works, the name of which he is not at liberty to mention, similar tests made at these works, and on this occasion learned that constants C had been obtained in their tests, which, if he remembers correctly, averaged between 17,000 and 24,000 for the special shapes rolled. It is to be regretted that all these tests were made without the aid of good optical pyrometers. If such instruments had been used, the tests could now be brought on a common basis and constants C fixed with accuracy for every possible case. We could then determine with practical certainty the power required to roll steel, no matter whether the finished product be rails, structural shapes, bars, plates or special shapes, provided the carbon contents come within the limits for which constant C was obtained.

Why the Expression "Constant C" is Used.

The expression "constant C" has been used throughout this article; its use being regarded by the writer as correct because the work required to produce a like

effect, under like conditions, on like material, should always be the same. In other words, the work required to bring about a reduction of 1 sq. in. for a length of 1 ft. on the so-called soft steels of the same carbon contents and the same rolling temperature, disregarding any possible small increase in density due to previous rolling, should always be the same.

Referring back to the formula for determining the average actual horsepower developed during passes, we see, for instance, that $A_b - A_1$ represents the total reduction in square inches during the first pass; L_1 the length in feet after the first pass, and C the average work required to bring about a reduction of 1 sq. in. in cross section for a length of 1 ft. Therefore, $CL_1 (A_b - A_1)$ represents in averaging all the passes (I repeat the expression, in averaging all the passes, for it is important to remember this), the work required for that pass. The summation of all the quantities, one of which is given in detail above, gives the numerator of the formula, which divided by the product of the sum of the duration of the passes expressed in seconds multiplied by 550, plus the friction load of the engine, which may be assumed with comparative accuracy for each case, and which in the five tests made by the writer averaged 160 i.h.p., gives the average actual horsepower required during passes.


TEMPERATURES OF STEELS AT TIME OF ROLLING
2,600°F.
2,400°F.
2,200°F.
2,000°F.
1,800°F.
1,600°F.
1,400°F.
1,200°F.
A
B
NO. 1
NO. 2
NO. 3
NO. 4
NO. 5
+ CURVE OBTAINED IN ROLLING PLATE 4¼" X .112" X 59.45 FT. - NO. 1
X " " " " " 4 9/32" X .122" X 57.8 FT. - NO. 2
* " " " " " 5 3/8" X .123" X 60 FT. - NO. 3
O " " " " " 13 9/16" X .104" X 45 FT. - NO. 4
✦ " " " " " 22 3/16" X .259" X 19.8 FT. - NO. 5
10,000
20,000
30,000
40,000
50,000
60,000
70,000
CONSTANT C'S IN FT. LBS.

THE POWER REQUIRED IN ROLLING STEELS.

Fig. 1.—Constant C Curve, Showing Work Required at Different Temperatures Per 1 Sq. In. Reduction Per Foot Length of Piece During the Rolling of Soft Steels Containing Up to 0.15 Per Cent. Carbon.

As to the Number of Passes Required.

All other conditions having been made favorable, the question how many passes are required to break down and finish a billet, slab or ingot is closely related to the tonnage produced by the mill, and in the case of a new installation must be decided first. No universal rule applying to all cases can be given here; special cases will require special treatment, and these same special cases under different conditions may require again different treatment. When the number of passes has been decided upon, the reduction for each pass must be fixed, and as a general rule the heavy drafts should come first, which, in case of large flywheel engines, sometimes are 150 per cent. above their rated capacity. When the size of ingot, slab or billet is known, also the reduction for each pass, then L_1, L_2, &c., are easily determined. The friction load is assumed from those of similar mills; it is averaged in the 21 in. three-high mills working on different sized plates (160 i.h.p., as already mentioned), but in the case of very heavy mills may even go over 400 i.h.p. The average lineal speed of roll surface in continuous mills is usually from 5 to 7 ft. per second, but in the case of reversing engines the speed reaches sometimes the high figure of 15 ft. per second. When the average lineal speed of the roll surface has been determined and the length after the pass is known, the duration of the pass is easily worked out.

A practical formula for the average actual horsepower developed during passes has now been proposed. If several different shapes are to be worked in the roll train by changing the rolls, the average actual horsepower developed during passes must be worked out for the product requiring the most power. In the case of three-high mills driven by steam engines which are fitted with the customary heavy flywheels, an engine developing at its full load continuously the horsepower as obtained by the above formula will be able to take care of the steel for which it was designed.

But the conditions in the case of a reversing engine, in the case of the motors in an electrically driven mill, and further in the case of the gas engine driven mill are somewhat different. It is important in each case that we know the maximum power that may be developed during any pass and here the average actual horsepower developed during passes is not sufficient. In the rolling of steel, as already mentioned, very large overloads have to be taken care of. These overloads seldom last longer than 10 sec., but, of course, they must be provided for, even though only of short duration.

Providing for the Several Kinds of Engines.

The steam engine, in the case of a three-high mill with both large cylinder overload capacity and the energy given out by the heavy flywheel during such periods, comes up to the requirements. But it is different in the case of the reversing engine, because we have no flywheel here to help out and the energy stored in the revolving masses is insignificant when compared with the demand for power. It is therefore necessary to know quite closely the power that may be required at the mill driving shaft, and calculations must be made so that all this power may be developed in the engine cylinder. In the case of electric motor driven mills, the manufacturer of the electric apparatus and machinery must know the overload that his machinery may be required to stand so that he may get out his designs accordingly. The science of motor building has reached such a stage now that the manufacturer of the apparatus can satisfy

practically any demand of even the severest service if the conditions of such service are previously known.

When the gas engine is considered as a prime mover for roll trains, it is even more important that the exact power be known that will be needed to drive the roll train because of the very small overload capacity of the engine. The only possible way of arriving at the exact power requirement is to work out the load to be developed at the mill driving shaft for each pass and then specify an engine or motor that will be able to take care of this maximum load. The formula used for determining the average actual horsepower developed during passes will answer in this case also if we can fix the value of constant C for each pass. The writer offers the curve shown in Fig. 1 for fixing constant C for each pass; this curve is based on the results of the five tests already mentioned several times. In making this offer the writer well realizes that he lays himself open to the criticism of presenting something the accuracy of which is not yet fully established; however, he believes that the curve is a very close approximation to the true curve because of the fact that, not only the constants C of the five tests already mentioned fall within this curve, but also the constants C of those tests conducted by the engineers mentioned. The writer has had considerable practical experience in large and small forge work, and the general direction of the curve is in line with his experience of the rapid increase of work required to change the section of the steel as it becomes cool. In all future work this curve could be made almost scientifically correct by exercising care to obtain all quantities accurately and by using a suitable optical pyrometer.

For the purpose of ascertaining both the magnitude of the maximum power requirement and on which pass it comes, the following arrangement of the formula containing constant C will answer:

$$\text{Pass No. 1 } \frac{C_1 L_1 (R_b - R_1)}{550\, s} + F = \text{"actual horsepower."}$$

$$\text{Pass No. 2 } \frac{C_2 L_2 (R_1 - R_2)}{550\, s} + F = \text{"actual horsepower."}$$

$$\text{Pass No. 3 } \frac{C_3 L_3 (R_2 - R_3)}{550\, s} + F = \text{"actual horsepower," &c.}$$

In this arrangement R_b, R_1, R_2, R_3, &c., L_1, L_2, L_3, &c., "s" and F have the same significance as the quantities in formula 1. Constants C_1, C_2, C_3, &c., are determined in the manner shown in Fig. 2.

Determination of Constants C.

For ¼ x 22 in. by 22 ft. plate rolled from 2⅝ x 22 x 28 in. billet.
Average starting temperature, 2400 degrees F.
Average finishing temperature, 1400 degrees F.
Roll speed, 6 ft. per second.
Average drop of temperature per 1 sec., 24 degrees F.

Pass No.	Area. Sq. in.	L'gth. Feet.	Duration of pass in seconds.	Interval between passes. Sec.	Pass + interval. Sec.	Calculated drop. Deg. F.	Average temp. when rolling. Deg. F.	Constants C
1	2	3	4	5	6	7	8	9
1	42.5	2.87	0.45	2.00	2.45	..	2,400	12,500
2	31.7	3.86	0.74	1.75	2.49	60	2,340	13,000
3	24	5.07	0.86	2.25	3.11	74	2,266	14,200
4	&c.							

In working out the sheet shown in this figure, the dimensions of billet and finished section are given, also roll speed and reduction per pass; the starting temperature or the temperature at which the billet enters the rolls is usually the highest temperature at which the steel may be worked. The finishing temperature differs for different shapes, being, of course, lowest in thin plates and higher in heavy structural shapes as rails, billets, &c.

The drop in temperature per 1 second is obtained by dividing the difference between the starting and finishing temperatures by the sum of all the figures in the "pass plus interval" column, or, in other words, by the total number of seconds that shall elapse from the time the billet, slab or ingot enters until the finished product comes from the finishing rolls. In working out this drop in temperature per 1 second, the assumption is made that the rate of cooling is the same for all the sections of the different passes, no allowance being made for the many other conditions influencing the rate of cooling, such as the temperature of the atmosphere, the temperature and quantity of water running on rolls, heat lost while the sections are in contact with the iron plates of the hot bed, different rates of cooling because of different sectional areas, &c.; these conditions are not of sufficient importance to warrant the introduction of coefficients different in each case and difficult to determine. These are minor questions only and can be left out without detracting from the practical value of the results.

Even in very small sections, such as occur in thin plates, when during the transfer from one pass to another the steel remains in contact with the comparatively cold plates of the hot bed for a greater period of time than is usual, it seems best to use the average drop of temperature per 1 second only, rather than to introduce uncertainties that might lead to serious errors. The duration of pass is easily obtained when length of piece and roll speed are known, no allowance being made for slips, as these do not belong to normal conditions of operation. The interval between passes can be very closely timed and estimated by those familiar with mill operations, due allowance being made for the turning of the piece and transfers from one set of rolls to another set.

When the average drop of temperature per 1 second and the duration of the period from one pass to the next one are known, the drop of temperature for column 7 is easily figured. The average temperature during rolling, column 8, is the difference between average temperature during rolling of the preceding pass and the "calculated drop" in column 7. When thus the average temperature during rolling has been found, constant C can be read from the curve in Fig. 1, placed in the formula and the actual horsepower determined for each pass. An inspection of these figures will then reveal both the maximum actual horsepower to be developed at the engine shaft and the pass on which the maximum actual horsepower comes, when the power required has been worked out for all the passes.

International Association for Testing Materials.

The fifth congress of the International Association for Testing Materials represented in this country by the American Society for Testing Materials, will be held in Copenhagen, Denmark, early in September, 1909. Arrangements are actively in progress, and the indications are that it will be the most successful convention in the history of the organization. The programme will consist largely of official reports of standing committees and individual referees on subjects relating to the testing of materials. By action of the council nonofficial papers by members of the association will be restricted to the following subjects:

A. METALS. — (a) Metallography; (b) Hardness Testing; (c) Impact Tests; (d) Testing Metals by Alternating Stresses. Thermal Treatment, &c.; (e) Testing of Cast Iron; (f) Influence of Increased Temperature on the Quality of Metal.

B. HYDRAULIC CEMENTS. — (g) Reinforced Concrete; (h) Progress in the Methods of Testing; (i) Cement in Sea Water; (j) Constancy of Volume; (k) Tests by Means of Prisms and Standard Sand; (l) Weathering Resistance of Building Stones.

C. MISCELLANEOUS. — (m) Oils; (n) Caoutchouc; (o) Wood; (p) Paints on Metallic Structures.

The International Association has begun the publication of Proceedings, which will be issued three or four times a year. Further information will be given by the general secretary of the International Association, 11 Nordbahnstrasse 50, Vienna, Austria, or by Edgar Marburg, secretary American Society for Testing Materials, University of Pennsylvania, Philadelphia, Pa.

The Riverside Engine Company, Oil City, Pa., builder of the Riverside heavy duty gas engine, has extended its sales organization by opening an office in the Rockefeller Building, Cleveland, Ohio, in charge of the Holbeck Company. The company's shops have been running full time in spite of the recent financial depression.

A delegation from the Steel Structural Manufacturers' Club of Chicago visited Milwaukee Friday, July 17. They were entertained by Milwaukee manufacturers at luncheon at the Country Club, and in the afternoon visited several of the large industrial plants.

The Deposition of Zinc for Protecting Iron and Steel Surfaces.

A recent issue* of the *Transactions* of the Glasgow Technical College Scientific Society, Glasgow, Scotland, reproduces a paper read by Sherard Cowper-Coles before a meeting of the society. This paper describes the four processes at present in use for applying zinc to iron and steel, as follows: 1. Hot or molten galvanizing. 2. Electro or cold galvanizing. 3. Dry galvanizing or Sherardizing. 4. Vapor galvanizing or Cowperizing.

The first of these processes is the one in ordinary use. The other three have been quite thoroughly described in *The Iron Age*. The reader may consult the following list of articles if it is desired to refer to them:

"Sherardizing" (illustrated), October 20, 1904.
"Investigation of Properties of Zinc Coatings," by Prof. Charles Burgess, February 2, 1905.
"Electrolytic Galvanizing," by Henry I. White, January 18, 1906.
"Art of Galvanizing," by Alfred Sang, May 23 and 30, 1907.

The process of vaporizing or Cowperizing, which is the latest development in galvanizing, is described as follows in the paper by Mr. Cowper-Coles, above referred to:

This process is distinctive from all other processes in-

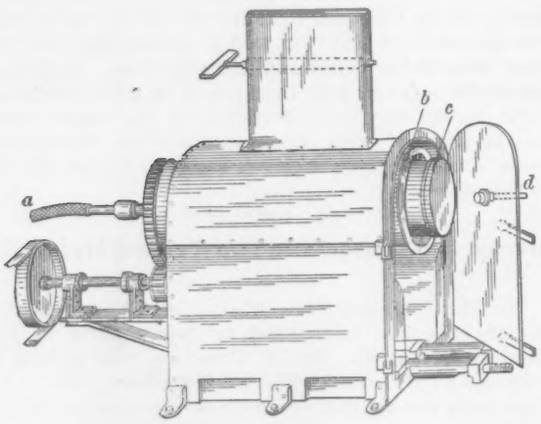


Fig. 1.—Apparatus for Cowperizing or Vapor Galvanizing.

asmuch as the articles coated with zinc are not brought into contact with molten zinc or any of its compounds, but placed in a separate chamber into which zinc vapor is passed. A convenient form of apparatus is shown in the illustration, Fig. 1. It consists of an inner drum marked *c*, composed of wire netting or gauze, in which the articles to be Cowperized are placed. This case or hollow drum is slowly rotated inside an outer cylinder, *b*, composed of wrought iron, in which the metallic zinc is heated by means of gas or an electric furnace, or any other suitable means, to a temperature sufficiently high to volatilize the zinc. Hydrogen gas is forced into the apparatus through the tube marked *a*, and a pilot light of hydrogen is kept burning through a small hole in the door marked *d*, which makes a gastight joint when closed. The apparatus for Cowperizing has to be modified to suit various requirements, but in almost all cases it is necessary to move the objects to insure their being evenly coated with zinc. This process has also been successful when applied to decorating porcelain and metallic surfaces with a brilliant coating of metallic zinc.

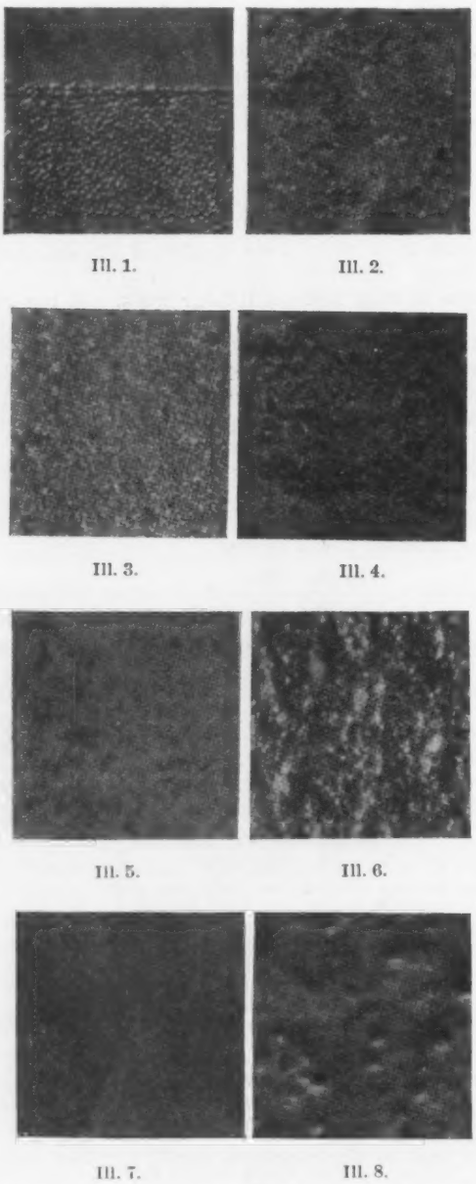
The conclusion of Mr. Cowper-Coles' paper is as follows:

In conclusion I will compare the advantages and disadvantages of the various systems described in the paper.

The Advantages of Sherardizing Over Hot Galvanizing.

The process of Sherardizing has the following advantages over hot galvanizing:

There is no waste of zinc due to the formation of zinc-iron alloys. Less zinc is required to give the same protective coating, the zinc being evenly distributed. The temperature required is lower, consequently the amount of fuel consumed is less. The labor is less, as the articles do not require to be cleansed as carefully as in hot galvanizing. No flux is required. No dross or skimmings are formed. There is no danger of explosion, breaking of castings or distortion of thin ironwork. Dry galvanized machined work does not require refitting, as the coating is evenly distributed. There is not the same reduction in tensile strength as in the case of hot galvanizing. Work can be placed directly in the dry galvanizing drum from the pickling vat without drying. The process can be worked intermittently without waste. Iron can be coated with zinc to any desired thickness. The whole of the zinc is consumed without waste. The depreciation of plant is small compared with hot galvanizing.



Ill. 1. Ill. 2.

Ill. 3. Ill. 4.

Ill. 5. Ill. 6.

Ill. 7. Ill. 8.

Fig. 2.—Illustrations of Photo-Micrographs Showing Surfaces Produced by Hot and Cold Galvanizing.

Comparison of Hot, Cold, Galvanized and Sherardized Surfaces.

Surfaces obtained by hot and cold galvanizing and Sherardizing are different in each case, but they can readily be distinguished by anybody conversant with the three processes. In the case of hot galvanizing the surface is spangled, or if not spangled has the appearance of cast metal. In the case of cold galvanizing the surface is free from spangles and has a matted or frosted surface; uniform, if the work has been well executed. Sherardizing is again distinctive from the two former processes, the general appearance resembling more that of cold galvanizing than hot galvanizing, but is more lustrous and metallic, and is uniformly distributed over the whole surface, which is not the case with the hot and

* Vol. IV, Part 4, Session 1907-8.

cold galvanizing processes. The Sherardizing process, although similar to cold galvanizing in some respects, is also similar to hot galvanizing in other respects, inasmuch as the zinc alloys with the iron and forms a protective zinc-iron alloy intermediate between the zinc coating and the underlying metal.

In Fig. 2, illustrations Nos. 1 and 2 show photo-micrographs of hot and cold galvanizing. The line in the center of illustration 1 shows the line of demarcation between the crystals or spangles. Illustration 2 shows zinc electro deposited by the regenerative process from a solution of zinc sulphate with a current density of about 20 amperes per square foot, the electrolyte being kept in the best working condition by passing it through a filter bed of zinc dust and coke.

Illustration 3 shows an iron surface coated with zinc by the Sherardizing process. Illustrations 4 and 5 show photo-micrographs of surfaces Sherardized with and without the presence of carbon in the zinc dust, the surfaces appearing to be identically the same.

It was at one time thought that zinc dust containing carbon might have a detrimental effect on the nature of the deposit, due to the retention of small portions of carbon setting up galvanic action in the presence of moisture. The microscope does not reveal any small particles of carbon in the zinc surface.

The Copper Sulphate Test for Determining the Thickness of Zinc Coatings.

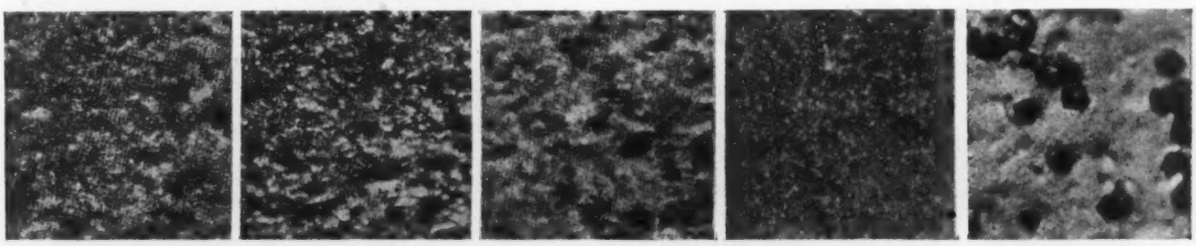
The copper sulphate test known as Preece's test is not applicable as a comparative test of the thickness of zinc applied by the Sherardizing or electro-zincking process for the following reasons: On applying Preece's tests to Sherardized and hot galvanized articles coated with an equal thickness of zinc, the former requires from three to four times the number of immersions, which suffice to remove the zinc from the latter. When hot galvanized articles are placed in a saturated solution of copper sulphate the copper is precipitated to a loose form, but when Sherardized or electro-zincked articles are similarly treated the copper adheres firmly to the zinc and no fresh surface is exposed, apparently due to the deposit of zinc applied by the electro-zincking and Sherardizing processes having a fine matted surface.

Ferric Sulphate Solution as a Test of Thickness of Zinc Coatings.

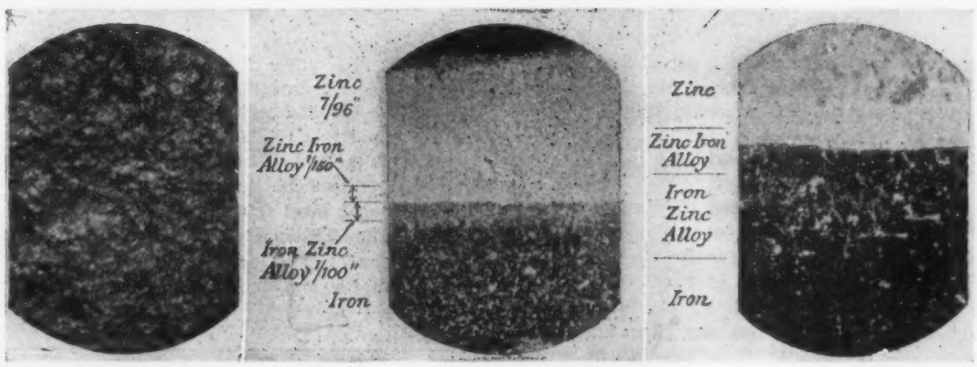
It would appear from these observations that the apparently great resistance to corrosion of Sherardized iron when subject to Preece's test is due to the protection of the zinc by the deposited copper; so experiments were made with a solution of ferric sulphate, which dissolves zinc without forming a precipitate on the zinc coating. To test this, known areas of Sherardized and hot galvanized plate were exposed to the action of ferric-sulphate solution for an equal period, and the amount of ferrous salt formed by the reducing action of the zinc determined. The column headed "Weight of zinc dissolved," in the following table, shows the relative corrosion:

Nos.	Sample.	Zinc per square foot. Grams.	Weight of zinc dissolved. Grams.
1.	Sherardizing	26.908	0.080
2.	Sherardizing	26.908	0.074
3.	Sherardizing	22.93	0.057
4.	Hot galvanizing	22.12	0.058
5.	Sherardizing	31.116	0.034

Sample No. 2 was moistened with water and allowed to dry. The oxide formed appears to protect the zinc, and this protection is more marked if water is allowed to act for a longer period than was permissible in these experiments. It will be noticed that samples 1 and 2, which had a thicker coating than samples 3 and 4, dissolved to a greater extent than samples 3 and 4, which had practically the same weight of zinc coating, dissolved. Sample 5 was Sherardized copper, and although the zinc coating was the heaviest, yet the corrosion was in this case the least. On testing this sample with copper sulphate solution, as in the other cases, instead of a brown precipitate of copper a bright metallic deposit was obtained, and no further action seemed to occur. From the result of these experiments and other tests, it may be concluded that Sherardizing offers equal, and probably greater, resistance to ordinary corrosive influences than hot galvanized iron coated with an equal weight of zinc, and the resistance is considerably increased by repeated moistening and drying, so as to form an oxide which renders the surface less soluble.



Ill. 10. Ill. 11. Ill. 12. Ill. 13. Ill. 14.



Ill. 15. Ill. 16. Ill. 17.

Fig. 3.—Illustrations of Photo-Micrographs Showing the Results of Experiments to Elucidate the Nature of the Union Between a Sherardized Coating and the Base Metal as Compared with Electro-Galvanizing.

Experiments to Elucidate the Nature of the Union Between a Sherardized Coating and the Base Metal as Compared with Electro-Galvanizing.

Three sheets of charcoal iron were taken and sand blasted, and without further treatment one of them was hot galvanized (not passing through rollers), one cold galvanized, and the third Sherardized. Each was carefully weighed before and after being coated, with the following results:

Weight of zinc, hot galvanized, 1.49 oz. per square foot.
Weight of zinc, cold galvanized, 1.55 oz. per square foot.
Weight of zinc, Sherardized sheet, 1.49 oz. per square foot.

The photo-micrographs, Fig. 2, illustrations 7 and 8,

illustrate the nature of the deposits, each being magnified 45 diameters. Illustration No. 6 is the charcoal iron sand blasted only.

The deposits of zinc in each case were dissolved off by repeated immersions in copper sulphate, the final flash of copper left at the end was removed by very rapid immersion in nitric acid, and the specimens were then washed and dried and photo-micrographs taken of each at 45 diameters magnification. See Fig. 3, illustrations Nos. 10, 11 and 12.

As the structure of the intermediate surfaces between the iron and zinc coatings was not well developed by the above method of treatment, a second set of specimens was etched electrically, the specimens being made anodes in a solution of ammonium chloride. The same current was passed through each specimen per square foot. It was found that the time required to strip the specimens of zinc were as follows:

Time required to strip hot galvanizing, 1¾ hr.
Time required to strip cold galvanizing, 3 hr.
Time required to strip Sherardizing, 4½ hr.

The longer time taken to dissolve the zinc applied by the Sherardizing process is probably due to the rougher surface, to which adhere the products of the reaction which retard further dissolving action, as in the case of Preece's test, already referred to. As soon as the zinc deposits had entirely dissolved away the specimens were removed, washed and dried, and photo-micrographs taken of each surface, magnified 45 diameters. See Fig. 3, illustrations Nos. 13, 14 and 15.

It will be observed that the etching in the case of the cold galvanized iron is very deep and marked, while the surfaces underneath the hot galvanizing and Sherardizing are similar, with close grained structures, and have not been noticeably affected by the etching process. This bears out the supposition that in both the latter cases there is not merely mechanical adhesion between the coating and the base, but that an alloy of zinc and iron is actually formed at the surface of junction, and this film of alloy is less liable to corrosion than is the iron itself.

Comparison of Advantages of Cowperizing Over Hot Galvanizing.

The vapor or Cowperizing process is especially suitable for coating articles with threads, or which require to be accurately fitted, as the zinc is evenly distributed. The zinc combines with the surface of the iron forming a rustless zinc alloy. The articles on removal from the Cowperizing drum do not require any cleaning or washing. The process is cheaper than hot galvanizing, as there is less handling and the amount of heat required is small, as only a small quantity of zinc has to be heated. The process, like Sherardizing, is not suitable for coating articles which are dependent on the soldering action of molten zinc to make them watertight, or when the spangled effect obtained by hot galvanizing is an essential condition. The whole of the zinc is consumed, and there is no dross or residue formed. The process can be quickly started, as there is no large quantity of metal to get hot.

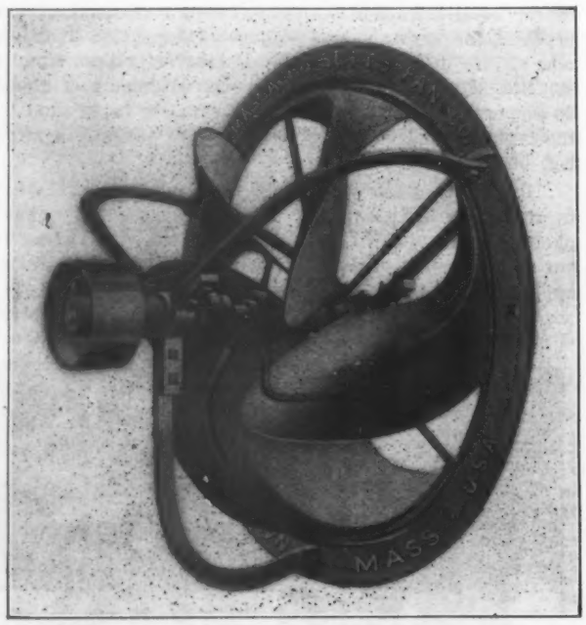
Electro zincking, Sherardizing and Cowperizing all have a large field of application and will greatly increase the amount of iron coated every year with zinc, as each process has its own peculiarities which render it more suitable than any other process for specific purposes, and in many cases enable iron objects to be coated with zinc, which could not be done by the process of hot galvanizing.

Tentative plans for a building with a tower 1000 ft. high, to be erected on the site of the present Mills Building, 15 Broad street, New York, have been drawn by Ernest Flagg, a New York architect. No definite statement is made, but it is probable work will begin within a year or more on the new building. The plans locate the tower in the center of the building. The estimated cost is $7,000,000.

William Whyte, vice-president of the Canadian Pacific Railroad, after a tour of the three prairie provinces of Canada, estimates this year's wheat crop at 125,000,000 bushels.

Davidson Fan Thrust Bearings.

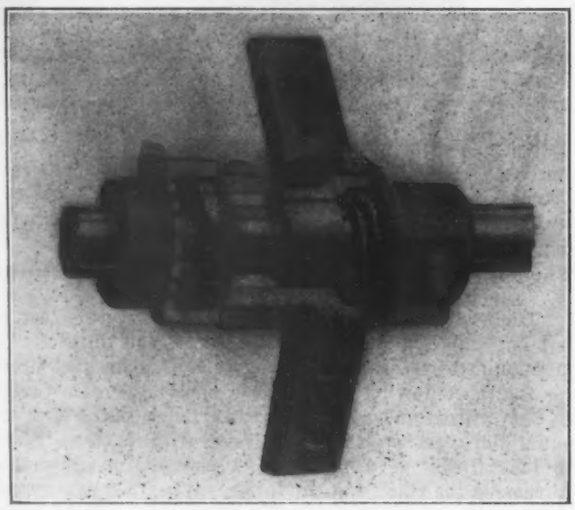
The reaction of the air against the blades of fans of the propeller type produces end thrust on the shaft. Although the pressure per square inch upon the face of the fan is relatively slight, the aggregate over the entire area is sufficient to warrant consideration, for its intensity per



The Davidson Propeller Fan Built by the aMssachusetts Fan Company.

unit of area when concentrated upon the surfaces of a collar and the bearing end is considerable.

In the Davidson ventilating fans manufactured by the Massachusetts Fan Company, Watertown, Mass., this end thrust is provided for in a ball thrust bearing which greatly reduces the thrust friction. It consists of a series of hardened steel balls carried in a brass ring between two hardened steel rings of similar shape, all being loose on the shaft. The main portion of the cast iron bearing, to which the supporting arms are bolted, bears against one steel ring which remains stationary. The other turns



Detail of the Thrust Bearing Used on the Davidson Propeller Fan.

with the thrust collar which is fast on the shaft and encloses the three rings. The balls bear on the inside faces of the two steel rings, while the brass ring containing them is perfectly free to turn between the steel rings. There is claimed to be no possibility of rusting in place.

The main bearing lining is of babbitt metal. The whole is constantly lubricated by a ring oiler dipping into a large oil reservoir cored in the lower half of the bearing. The frame consists of both wrought and cast iron

parts, carefully machined, fitted and bolted together in the most rigid manner. Each of the bearings is connected to a heavy cast iron wall ring by three heavy wrought iron braces.

The vertical shaft driving Davidson fans are fitted with special extra large adjustable lower or thrust bearings, made up of hardened steel disks running in a bath of oil. The entire weight of the fan and shaft is carried by this bearing. The upper or guide bearing is of the ball and socket type, lined with a removable graphite bushing which requires no attention or lubrication. In all other respects the vertical fans are identical with those of the horizontal type.

To provide for various conditions and individual preferences, Davidson fans are regularly furnished with any of the different standard direct or alternating current motors.

New Steam and Oil Separators.

Three steam and oil separators of new design just completed by the Steam Appliance Company, Milwaukee, Wis., are here illustrated. The necessity of nearly complete separation of water from live steam and oil from exhaust steam, where the latter is condensed for return to boilers or discharged into heating systems, is quite well understood and appreciated by steam users.

Concerning the efficiency of the Triumph oil seperator, Fig. 1, the company offers, subject to 60 days' trial on approval, a guarantee that exhaust steam after passing through it will be 99.995 per cent. pure, which means the practical elimination of every particle of oil. To accomplish this result a system of corrugated spiral baffling is interposed against the course of the steam; it is so arranged as to carry the steam downward with a whirling motion which causes the oil to be thrown out centrifugally against the corrugated walls of the separator. From there it is drained along with entrained water into troughs, the first of which is seen in the broken out section at the flange connection, the second being underneath it, and thence it passes through a series of drain pipes to the bottom of the separator below a guard shield.

In the Victor horizontal separator, Fig. 2, a different design of baffling is followed. On entering the inlet at the right, as shown in the engraving, the steam first strikes the spiral corrugations in the neck of the opening, which are designed to give a whirling motion; it then comes in contact with the first perpendicular baffle, seen in the broken away view, from which it is deflected in either direction and passes on to the opposite baffles, between which there is an opening allowing the flow to be carried to the outlet at the left. Separated particles of oil and water are drained downward by gravity through holes in the shield at the bottom of the baffles into the separator well, from whence they are withdrawn through the bottom drain lug. Being cast in a single piece, there are no packed joints in the body of this separator to give trouble through leakage. Since the centrifugal motion imparted by the baffles is chiefly relied upon to cause the desired separation the course of the steam is not tortuous, but is passed with but little deflection from its regular direction.

Fig. 3 represents the vertical type of the Victor separator, which is similar in principle of action to the horizontal type, but of somewhat modified construction on account of the different direction of flow of the steam. The body of this separator is also made of a single casting, and has an extended neck to provide room for bolting directly to engine throttle valves. All of the three styles of separators here shown are made in sizes of 2 to 10 in.

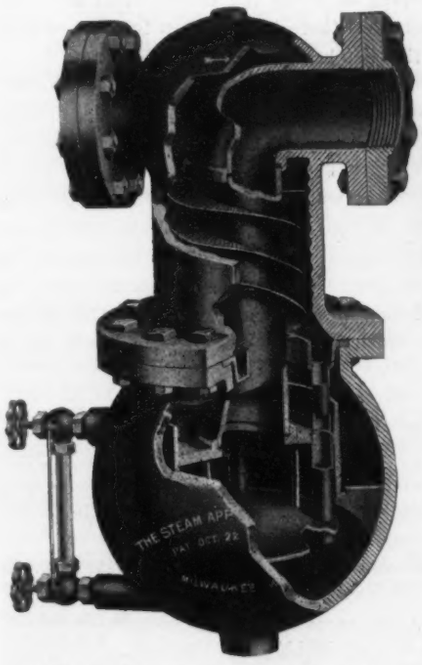


Fig. 1.—The Triumph Oil Separator.

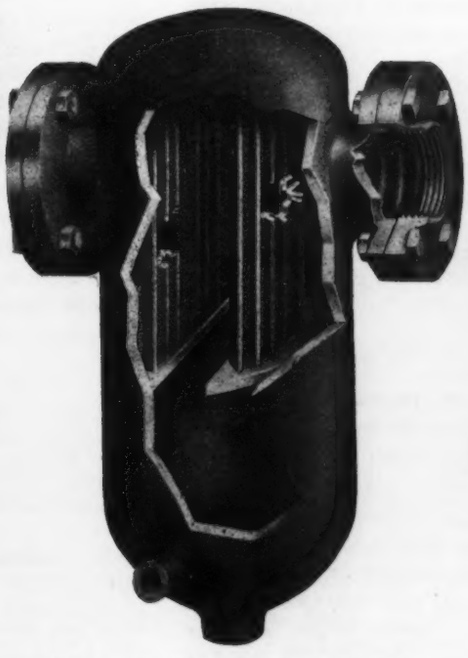


Fig. 2.—The Victor Horizontal Separator.

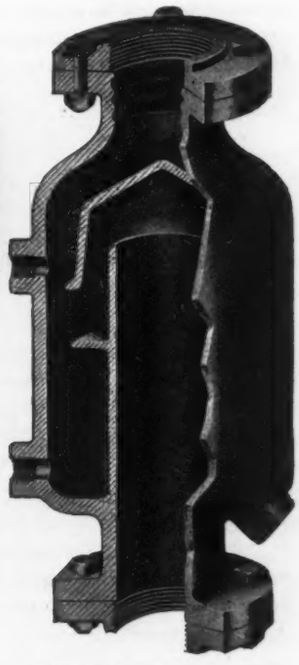


Fig. 3.—The Victor Vertical Separator.

New Steam and Oil Separators Made by the Steam Appliance Company, Milwaukee, Wis.

Rebuilding the Quebec Bridge.—The Canadian Government will assume all the assets and franchises of the Quebec Railway & Bridge Company under a resolution which will be introduced at Ottawa, and the reconstruction of the Quebec bridge will be undertaken as a Government project, under the supervision of the Trans-Continental Railway Commission. The oversight of the construction work will be in the hands of a board of prominent engineers, one from Canada, one from the United States, and the third from Great Britain. It is stated that the Canadian Government will assume the loss of all expenditures made by the Quebec Bridge Company under the bond issue guaranteed by the government up to the collapse of the bridge, the amount being between $5,000,000 and $6,000,000.

Robesonia Furnace, Robesonia, Pa., was bloyn out Friday, July 10, after a run of three years, three months and 18 days. The stack and accessories were in good condition, apparently fit for another year's run or more. Cornwall ore, running from 42 to 48 per cent. in iron, was used exclusively. The total of pig iron made was 164,414 tons, of which 77½ per cent. was No. 1, 20 per cent. No. 2 and 2½ per cent. No. 3. No mottled or white iron was made in the entire blast, except 47 tons produced when blowing in.

THE IRON AGE

Established in 1855.

New York, Thursday, July 23, 1908.

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The Favorable Balance in Our Foreign Trade.

The statistics of our foreign commerce for the year ended June 30 are as follows:

Merchandise exports	$1,860,799,097
Merchandise imports	1,194,341,994
Apparent merchandise balance	$666,457,103
Silver, net exports	13,350,121
Total apparent balance	$679,807,224
Gold, net imports	75,864,609
Apparent unsettled balance	$603,942,615

The total merchandise commerce, imports plus exports, was $3,055,141,091. The apparent unsettled balance is 20 per cent. of this. It is well understood that there must always be this apparent unsettled balance of trade for two general reasons: 1, Because the statistics of imports and exports are not strictly comparable, and, 2, because there is a partial settlement by means other than the exchange of gold and silver. Under the first head come the fact that imports are frequently undervalued, while exports are frequently overvalued, and the fact that imports are valued at the foreign port and exports at the home port. Under the second head come the movement in securities, which are a commodity to be settled for just as much as the merchandise which appears in the statistics, the interest and dividend payment on American stocks and bonds held abroad, and the money spent abroad by American tourists, in excess of that which is spent in this country by foreign tourists. The freights paid to foreign vessel owners are an alternative to the difference between valuing our imports at one point and our exports at another.

The improper valuations of merchandise and the freights paid to foreign vessel owners are functions in a measure of the total amount of our foreign commerce. In this respect, if the total foreign commerce increases, the apparent favorable balance must also increase, or we lose. The movement of securities and the money spent abroad by tourists are practically unknown quantities. Attempts are sometimes made to estimate them, but such estimates are useless in an effort to analyze our apparent unsettled balance of trade; it is reasoning backward. The actual trade statistics will show more about this movement than estimates of the movement will show themselves.

There is so much loose discussion of our foreign trade, and it is so often assumed that there is an increase in our material wealth quite comparable to the apparent favorable balance of trade, that it is well to state emphatically that such is not the case. Our foreign commerce does not bring us any quantity of material wealth in that way. Its benefit is almost exclusively in the line that it enables us to dispose of products which we can spare easily, and gives us in return products which we need.

The familiar idea is that the favorable balance of trade is settled in gold; but it is not the hundreds of millions of a favorable balance shown every year that is thus settled. It is only the small fraction of this amount—the real balance, after the merchandise balance has been greatly whittled down in various ways, which is thus settled. Thus, in the 10 years ended June 30, 1907, the apparent merchandise balance of trade was $5,000,000,000, but the net gold imports were only a trifle over $250,000,000, the gold payment therefore being only about 5 per cent. of the apparent bill rendered.

As regards the material prosperity of this country, it is only this small gold payment which helps. The apparent favorable balance does not benefit. The interchange of commodities is good, when we give that which we can spare for that which we need, but it is immaterial in what values the statistics are expressed, or whether they show a favorable balance, since we collect as we go along. A large balance of trade might be used to pay for American securities held abroad, bringing them back to this country and keeping at home the interest and dividend returns upon them, but there is no reason to suppose that in recent years this has been done.

The significance of the statistics for the fiscal year 1908 can be shown best by comparison with the past. The average of the preceding 10 years is a convenient standard, and it so chances that the statistics for years back show two fairly well defined and distinct periods, from 1888 to 1897, inclusive, and from 1898 to 1907, inclusive, fiscal years being meant in both cases. In the earlier period there were pretty uniform gold exports, while in the later period there was a fairly steady gold import movement. The statistics for the two periods are given below:

Fiscal Years 1888 *to* 1897.

Excess merchandise exports	$963,349,521
Excess silver exports	206,876,621
Excess gold exports	253,417,261
Total excess	$1,423,643,403
(Total merchandise imports and exports, $16,420,426,577.)	

Fiscal Years 1898 *to* 1907.

Excess merchandise exports	$5,001,783,290
Excess silver exports	219,069,432
Gross excess	$5,220,852,722
Excess gold imports	264,600,305
Total net excess	$4,956,252,417
(Total merchandise imports and exports, $24,371,655,270.)	

The gold exports from 1888 to 1897 represented more than half of our gold production, which we had to use to pay for that which we could not pay for otherwise. While the merchandise balance of trade appeared large, it was less than 6 per cent. of the total merchandise movement, and the errancy of the statistics, with the invisible balance of trade, amounted to more than this, so that we had to settle in gold.

In the next period, 1898 to 1907, our foreign commerce did much better. The total imports, plus exports, showed an increase of about one-half, while the merchandise balance of trade was quintupled. The apparent favorable balance, instead of being 6 per cent. of the total movement, was more than 20 per cent. Our exports of silver were about the same, and a result was that instead of exporting gold, we were able to import it. But note how little that cash settlement was: While the apparent favorable balance, merchandise and silver, was $5,220,000,000, the gold payment was only $264,600,000, just 5 per cent.

It was not this little gold payment that made this country rich in money. Comparing the dates at the be-

ginning and end of the period we are referring to, July 1, 1897, and July 1, 1907, the increase in gold coin, plus gold bullion in the United States Treasury, has been from $697,223,332 to $1,602,014,642, an increase of $904,791,410. That increase is almost four times as much as the amount we got in settlement of our foreign trade balance. The bulk of the increase came from our own gold production, which in those 10 years was about $786,000,000. Adding to this the gold received from abroad, $265,000,000, gives a total of $1,051,000,000. The increase in the visible supply of gold was $905,000,000, leaving a discrepancy of $146,000,000, which is the gold consumed or put into use as a metal and not as money.

So far as gold is concerned, then, our foreign commerce has given us very little, its main function having been to enable us to keep our gold production at home instead of using it to settle foreign obligations with.

The statistical record of the fiscal year ended June 30, 1908, compares very favorably in its general aspect with the average of the preceding 10 years. The actual figures can be compared by reference to the tables already presented. The total merchandise movement, imports plus exports, showed an increase in 1908 of one-fourth over the average of the preceding 10 years. The apparent favorable balance of trade, in merchandise, showed an increase of one-third, so that the balance is a larger percentage of the total business done than it was. Silver exports are slightly less. The gold imports are nearly three times as large, averaging $26,460,000 in the 10-year period, and being $75,865,000 in the year just ended.

Special Machinery Salesmen.

Builders of machinery which may be classed as special tools are more and more adopting the policy of taking active part in marketing their products. Instead of depending exclusively upon the machinery dealer, or sales resulting from correspondence or the initiative of the customer, the method is to send out representatives thoroughly equipped by special training to interest customers in the merits of the tools. Such manufacturers argue that the lists of the general machinery salesman are far too diversified to permit of an intimate acquaintance with any but the standard tools he represents. In a few cases manufacturers of special and semi-special machinery have cut loose completely from the dealers, maintaining offices and salesmen of their own in the various divisions of territory; but the more common custom is to keep men in the field in active co-operation with the machinery houses.

Under this system each representative may be given a large territory, its extent governed by the degree of specialization of the machine. The salesman can work deliberately, giving ample time to the customer or manufacturer whose needs the machine especially meets. In the case of a grinder used only in the manufacture of combustion engines, for example, the special salesman can devote his time to this trade, exploiting and demonstrating his one line, and alert for newcomers in the business. With almost every tool of special type a campaign of education must usually precede a sale, and it must be carried on at both the office and the shop. By keeping in mind possible variations of the machine for other purposes the salesman has often developed a much wider demand than was originally deemed likely. All the time the dealer is looking after the interests of the manufacturer. A sample machine is kept in stock for the inspection of such customers as are sent by the special salesman. The dealer receives a commission on all sales, whether the order was taken by his own office or by the manufacturer's own agent, if the rule of exclusive territorial rights is in practice, as is usual nowadays.

One question which may arise between manufacturer and dealer is the amount of the latter's commission. In certain cases where the greater part of the work of exploiting and marketing a machine is done by the special agent some manufacturers hold that the commission should be less than where the dealer works with no assistance from the machine builder except from the office, or in the routine of putting machines in operation, or later in removing causes of complaint. The argument is that the dealer has little to do in placing orders beyond maintaining a machine in stock and keeping generally on the lookout for possible business which the special representative can develop. The special agent is the man who shoulders the burden. He hunts for new opportunities; carries on a campaign of education on the economies of this particular tool; sees to its installation, and, when necessary, trains those who will operate it.

Where the dealer has exclusive territory the question has been raised, what part of the 10, 12½ or 15 per cent. commission he ordinarily receives should the dealer concede toward the increased expense of the manufacturer's sales department. There is even a feeling among some machinery builders that on special machines the dealer should have no share at all in sales with which he has had nothing to do. It is not our intention, however, to pass upon the relative rights of the two parties to the transaction, but only to state a condition which, while not wholly new, is a growing one, possessing elements different from those which have heretofore existed.

The opinion has been expressed lately by some builders of the so-called standard machine tools that sooner or later they will be forced to enter the field with their own specially trained salesmen. Their dealers serve them well. Indeed, as indicated above, the policy of manufacturers of special machinery is based on the fact that the middleman concentrates his salesmanship on the standard lines for which there is a larger market. But special machinery, to apply the term to the wide range of tools not classified as standard, has been developed until it strongly competes with the machinery which formerly did practically all of the work of a machine shop. The automatic and turret machines are excellent examples of this. The lathe builders believe that a great deal of work now put on the automatics could be done to better advantage in lathes. One man known everywhere in the trade has frequently remarked that "the best automatic machine in the world is a good engine lathe properly rigged for the work, and a bright boy at $5 a week to operate it"—a statement that conveys a good deal. The lathe people do not dispute the usefulness of the automatics and other similar machines, and use them to excellent advantage in their own shops. But they feel that an important class of work exists which popular favor has taken from the lathe and which would have been better done had it remained with the older machine. They are better equipped to fight their cause against the automatics than they were. They better understand the limitations of the later types. Naturally the feeling exists that it might pay to send out experts with more than a salesman's knowledge of machinery and methods.

The idea in another form exists in a growing practice among the machinery dealers of sending the young men who are to become their salesmen into the works of the machinery builders whom they represent. The suggested specialization would be carrying the present practice much farther, in confining the training to an individual works. But there is no thought of a break with

the dealers should special salesmen become an established factor in the trade. It has come to be an accepted fact that co-operation between the two branches of the trade is all important, and if the policy should be carried further by the introduction of the new element of the special salesman, it is wholly probable that both manufacturer and dealer would profit by it, and so would the user of machinery, the customer, who would receive the benefit of expert assistance in planning for cheaper and better production.

The Connecticut Brass Industry Slowly Reviving.

The brass manufacturers of the Naugatuck Valley report that their business is gradually reviving. There is nothing radical in the improvement, but the change is considered by the brass people to be a healthful one. The preference would be for slow but constant progress toward normal conditions rather than quick jumps to a top market. The American Brass Company's subsidiary companies at Waterbury, Ansonia and Torrington are gradually lengthening their working hours and calling back employes who had been laid off. None of the companies is back to a complete six-day schedule, but some departments are exceeding the normal working time of 60 hours a week. The American Brass Company finds its business "gradually improving." A smaller and independent mill states that there is a slight improvement in its business and that it has been compelled to run six days a week for the last fortnight, not so much because of the volume of business as because customers insist upon immediate shipments. Another company, a very large consumer of brass, writes: "Business with us, as is the case with most of the Waterbury manufacturers, has shown a slight tendency to improve within the last 30 days, improvement being more marked in Chicago and the West." Another manufacturer of brass goods says: "It is practically necessary to run our factory full time, as we have a great many small orders which cannot wait."

These changes are the more important, because they come in the time of year that is normally dullest. It is easy to reconcile the large number of small rush orders with the known low stocks of consumers, who represent a wide range of industries. Their increasing requirements in the face of the dog days are in harmony with the general expectation that the revivifying influence will become stronger and more widely extended with the return of cooler weather.

The New British Patent Law.

The plank in one of the national political party platforms urging retaliation on England and Canada for their enactments which make it necessary that patented machinery shall be manufactured in Great Britain and in the Dominion was quite expected, so far as England was concerned. Only a few weeks ago J. E. Evans-Jackson, chairman of the Patents Section of the London Chamber of Commerce, in an interview, corrected some popular misconceptions as to the transference of manufacturing plants to England, and foreshadowed the demand for retaliatory legislation in the United States. Mr. Evans-Jackson smiled at the statement then current in the English newspapers that the new law would bring tens of millions of business to England, and said:

> If it brings us £5,000,000 it will be a tremendous success; but I do not for a moment believe it will. I question the correctness of the statements current as to numerous American factories to be established in England. In the case of one American concern which is establishing a factory at Leicester, England, for the manufacture of razors, the determination to manufacture in England was arrived at three years before the change in the English patent law was made. Every day I am receiving letters from people who want to sell works to foreigners. I have as yet had no applications from foreigners for sites. At the same time I am glad of the act. It is the most protective measure since Cobden's day, a great victory for the Tariff Reform League, of which I am a vice-president.

This is the spirit in which tariff reformers in England are welcoming the new law, although the supporters of the Liberal and free trade government now in power deny that the law was conceived in a protectionist spirit, and insist that its intention was to insure that every machine or device that enjoys the privilege and advantages of the English patent law shall be available for use in England on equitable terms and with the least possible loss of time.

The United States Ambassador and also the German Ambassador in London asked, through the British Foreign Office, for an extension of time in the enforcement of the act against manufacturers of patent machinery and devices in their respective countries. In the House of Commons the Government was questioned as to what concessions, if any, were to be made in response to the American and German requests. Mr. Winston Churchill, the president of the Board of Trade—the state department charged with the administration of the patent code—replied for the Government that it was not its intention to make any change in the law of 1907, and it will accordingly go into full effect on August 28. About the same time the answer of the British Government to the German request was made public in Berlin by Dr. von Bethman Holburg, Imperial Secretary of State for the Interior. It was on the lines of Mr. Churchill's statement; but the Imperial Secretary pointed out to the Industrialists' Union that Section 27 of the new British law does not unreservedly demand the manufacture of every patent in Great Britain. The Comptroller of Patents and the courts in Great Britain are authorized, he reminded the union, to consider the situation in every case, and in given circumstances are empowered to extend the time limit.

Section 27 is retroactive in its application. It includes all patents that were taken out from 1894 to 1904; and according to the best calculation 16,000 patents come within the scope of the section. One of the prime movers for the new law says that if half of these patents are already worked in England, which is a liberal allowance, there are left about 8000 patents to which Section 27 applies. It is affirmed that the law will do more for England's industrial welfare and more to decrease unemployment than any act passed in the last 50 years.

CORRESPONDENCE.

Direct Air Pressure Pumping.

To the Editor: The company with which the writer is connected has, during the past seven or eight years, had in operation on the Pohle system 14 wells of an average depth of about 250 ft. These wells are in sand, interspersed with lenses of rather fine gravel. Some of the wells have 4, others 5, and others 6-in. discharge pipes, each having a 1¼-in. central air pipe. The water is found about 75 ft. from the surface, but, owing to the fine sand and gravel through which it must pass, there is considerable drop when the wells are pumping, the amount of drop depending upon the quantity of water pumped.

The lift at the different wells varies from 100 to 140 ft. Various submergencies or heads have been tried from 60 to 35 or 40 per cent. of the total head and lift. The wells being in almost constant use in connection with the works have made the conditions very unfavorable for conducting a series of experiments or tests that would

be of any particular value, but it is hoped that in the near future a favorable opportunity will offer.

As a means of obtaining a sufficient supply of water the wells have been a success, but from an economical standpoint per gallon of water pumped they have not been entirely satisfactory, and for this reason the writer some years ago undertook to work out theoretically the principles involved in the operation of the wells with the view of establishing the proper conditions for the most economical results. Formulas were deduced for determining the proper relation of head, lift, quantity of water, diameter of discharge pipe, quantity and pressure of free air required, &c., with the expectation of confirming or disproving them by actual test, but so far, for the reason stated above, without result.

The statements published from time to time in the past that have come to the observation of the writer, concerning the operation and tests of wells using direct air pressure, on account of insufficient data being given, have neither proved nor disproved the correctness of the theory proposed and the resulting formulas. The recent publication in *The Iron Age*, June 11, 1908, of experiments at Wilmerding, Pa., confirm the correctness of three of the formulas, while apparently not confirming two others.

In the article referred to the following statement is understood: Size of discharge pipe, gallons of water delivered per minute and ratio of lift to submergence remaining constant, the free air required per minute will be the same regardless of whether the lift is 10 or 100 ft.

This is at variance with theory, with the practice of engineers in figuring free air requirement, and also with the actual experience of the writer. Under the conditions as stated engineers figure the free air required would be proportional to the lift. Theoretically, the free air required does not increase proportionally with the lift. The statement that "the cubic feet of free air per gallon of water raised increases as the ratio increases for a given size of discharge pipe, and for a given ratio it decreases as the size of the discharge pipe increases," agrees with theory. Also the free air required per gallon of water decreases with increased submergence, the lift remaining constant.

The statement that "a curve representing the horsepower per gallon of water raised for varying depths and constant lift will at first decrease as the depth increases until it reaches a minimum point, after which it increases" is not in accordance with theory. Theoretically, commencing at 10 per cent. submergence, the horsepower of the air required increases by a constantly decreasing ratio for each percentage of increase in the submergence. Economy in horsepower, therefore of fuel, lies in the direction of lower percentage of submergence, while economy in size of compressor plant, piping, &c., lies in the direction of increased percentage of submergence up to, say, 60 per cent.

For any given well the submergence, lift and quantity of water discharged being known, the proper diameter of discharge and air pipe may be found, and the whole adjusted to the most economical working condition.

N. M. L.

Production by the United States Steel Corporation.

The American Iron and Steel Association's report for 1907, just issued, contains the usual statement of the production of the various forms of iron and steel in that year by the United States Steel Corporation subsidiaries, compared with the total for the country in the various lines. We have added the percentages for the preceding years, to make complete comparison through all the full calendar years of the corporation's existence. But one slight deviation in classification has been made in the statistics for the various years, the items "ferro phosphorus" and "Bessemer ferrosilicon" having been included with ferro manganese and spiegeleisen in the reports of two years, but the tonnage is so small that the percentage is not significantly changed. The figures represent gross tons in all cases, except that coke is stated in net tons. As has been noted heretofore, the Steel Corporation's percentage of steel ingots has steadily declined, and in most items declines are noted with some fluctuations:

	By U. S. Steel Corporation.	By independent companies.	Total shipments and production.	Percentage of U. S. Steel Corporation. 1907.	1906.	1905.	1904.	1903.	1902.
Shipments of iron ore from the Lake Superior region	23,148,467	19,096,603	42,245,070	54.7	54.2	56.0	53.8	58.8	60.4
Total production of iron ore	22,403,801	29,316,818	51,720,619	43.3	43.2	43.4	38.0	43.8	45.1
Production of coke, net tons	12,373,938	28,405,626	40,779,564	30.3	36.5	37.9	36.6	34.2	37.4
Spiegeleisen and ferromanganese	186,472	152,876	339,348	54.9	67.2	74.9	70.5	81.0	81.0
Bessemer, basic, low phosphorus, foundry, forge, ferrosilicon and all other pig iron	10,633,496	14,808,517	25,442,013	41.7	44.2	43.8	44.3	39.9	44.3
Total pig iron, including spiegel, ferromanganese,, ferrophosphorus and Bessemer ferrosilicon	10,819,968	14,961,393	25,781,361	41.9	44.5	44.2	44.6	40.4	44.7
Bessemer steel ingots and castings	7,556,460	4,111,089	11,667,549	64.7	65.7	67.4	69.0	72.0	73.9
Open hearth steel ingots and castings	5,543,088	6,006,648	11,549,736	47.9	49.6	51.4	50.4	51.0	52.4
Total Bessemer and open hearth steel ingots and castings	13,099,548	10,117,737	23,217,285	56.4	58.1	60.2	61.0	63.5	65.7
Bessemer steel rails	1,744,578	1,635,447	3,380,025	51.6	52.6	53.6	57.2	65.6	65.4
Structural shapes	1,066,727	873,625	1,940,352	54.9	54.6	54.6	55.1	60.3	57.9
Plates and sheets, including black plates for tinning, but excluding nail plate	2,372,498	1,876,334	4,248,832	55.8	56.3	57.4	58.0	59.9	59.4
Wire rods	1,443,191	574,392	2,017,583	71.5	71.7	69.9	71.3	73.1	71.5
Bars, skelp, nail plate, open hearth and iron rails, and other finished rolled products	2,814,042	5,463,988	8,278,030	33.9	33.8	31.0	28.6	29.8	31.1
Total finished rolled products, including rolled forging blooms and billets	9,441,036	10,423,786	19,864,822	47.5	48.1	47.3	47.8	51.2	50.8
Wire nails, kegs of 100 lb	7,794,546	3,936,498	11,731,044	66.4	65.5	66.1	67.0	70.6	64.8

Theoretically, the decrease of free air required is very rapid, from 10 to 35 per cent. of submergence to total lift and submergence, less rapid from 35 to 50 per cent., and after the submergence reaches 60 per cent. of the total, the decrease is so slight that it may be taken to be constant for any additional increase of submergence. To secure the maximum economy due to decreased quantity of free air required, it would be unnecessary to go beyond 60 per cent. submergence. Probably 50 per cent. would be nearer the practical limit. The curve for free air required for different percentages of submergence is a hyperbola.

The name of the Electric Controller & Supply Company, Cleveland, Ohio, has been changed to the Electric Controller & Mfg. Company. The new name is more in consideration of the nature and scope of the business, which includes the manufacture of lifting magnets, electric brakes, magnetic switches, solenoids, limit stops, arc welders, crane fittings, knife switches, flexible couplings, and the electric fault finder, as well as controllers of manual and magnetic switch types for all purposes.

The number of idle railroad cars in the United States and Canada on July 8 was 303,042, or 9378 less than on June 24.

The Uniform Bill of Lading.

A Document to Be Adopted in Official Classification Territory.

BY R. L. ARDREY.

The Interstate Commerce Commission has published a report "in the matter of bills of lading," which it is believed will dispose of the long standing controversy between the railroads and shipping interests on this complex question. The commission concedes that it does not have the power to enforce the adoption of any form of bill of lading, and its report merely recommends that the form which has been revised by the commission should be adopted September 1, 1908. It is understood that the railroads in official classification territory will act favorably upon this recommendation. Two forms are provided for, printed on the face side in different colors, one for "straight" and one for "order" consignments. The "order" bill will have a degree of negotiability, while the "straight" bill will be non-negotiable.

The new document is essentially the form filed with the commission a year ago by a joint committee representing the Eastern roads and various associations of shippers. In *The Iron Age* of November 7, 1907, page 1323, a history of the movement for the uniform bill of lading was given, with the objections to certain proposals made by various interests. At the hearing at Washington, as detailed in that article, it was brought out that bankers advance $2,500,000,000 a year on shipments of commodities like grain and cotton, which are carried on negotiable "order" bills of lading. The new bill of lading will be signed by the shipper as well as by the agent of the carrier. The present form is not signed by the shipper, and its provisions have not been enforced, but the new document will undoubtedly be recognized by the courts as a valid contract between the carrier and the shipper, especially since it has been promulgated and recommended by the Interstate Commerce Commission.

Liability for Loss.

The railroads accept their full common law liability for loss or damage in transit, as generally interpreted by the courts in this country; and on "house" freight and cars going to team tracks they remain liable as common carriers until 48 hr. after notice of arrival has been duly sent or given. Carload freight on private sidings is at the owner's risk. The exceptions to the liability of the carrier are stated in section 1 of the "conditions" as given below.

It will be seen that loss or damage is to be settled on the basis of the invoice price at the time and place of shipment. The grain and cotton brokers took violent exception to this clause at the hearing before the commission last fall, but the commission has made no change. The clause which gave the carrier the benefit of any insurance effected on the property was also a bone of contention. The commission has modified this clause, so that it will not be binding if it would have the effect of invalidating the insurance.

A Flaw in the Commission's Document.

The new document is so carefully drawn to safeguard the rights of the shipper as well as the carrier that it answers the needs of manufacturing interests. There is, however, one flaw in the document which may be productive of a great deal of trouble, and it might easily be corrected by the commission or by the railroads. The third paragraph of section 3 reads:

> Claims for loss, damage or delay must be made in writing to the carrier at the point of delivery or at the point of origin within four months after delivery of the property, or, in case of failure to make delivery, then within four months after a reasonable time for delivery has elapsed. Unless claims are so made, the carrier shall not be liable.

There are thousands of manufacturers whose general offices and claim departments are not located at the plants from which they ship; and a large number have two or more plants. There are also thousands of wholesale dealers in commodities like pig iron, coal, coke, lumber, &c., whose places of business are in central cities, but whose shipments are ordered direct from the place of production to their customers throughout the country. It is not customary for these shippers to file their claims at point of origin or at destination. In many cases an intermediate carrier settles with them.

As a rule shippers will pay no attention to this clause. Claims will be filed as heretofore, and if they are declined by the carrier to whom presented, after the four months have elapsed, the shipper may not be able to bring suit to enforce his claim because he did not comply with this provision. It is not necessary to specify in a bill of lading where the claim shall be presented. If the courts enforce this clause it will prove a veritable trap to many shippers to deprive them of their rights, because it will be disregarded in ordinary usage by the people who will be affected by it.

Heretofore the laws of the States have determined the life of a damage claim against a railroad, and few of the States bar such a claim in less than five years. There is no doubt that this time is too long, and that it is unfair to the railroad for a shipper to sleep on his rights for years before making demand for what he believes to be due him. Four months, however, may prove an unreasonably short time to outlaw a claim. Under all ordinary circumstances a shipper should be aware of his loss within four months, but mistakes will occur. The railroads make many mistakes. Some of them take more than four months to pay a claim after full proofs have been presented, and the delay is not always due to mistakes in the claim department. It would seem as though the line is drawn a little too closely and may work injustice to the shipper who overlooks his claim for four months, or who, through unavoidable circumstances, is unable to present proofs within that time. The commission, having recommended this document to the carriers, might hold that the payment of a claim that was not presented in the time and manner prescribed would be an unlawful "rebate."

The New Bill of Lading.

The following is the form of the bill of lading as it is given in the report of the Interstate Commerce Commission:

COPY OF BILL OF LADING—NEGOTIABLE.

.....Railroad Company.

ORDER BILL OF LADING—ORIGINAL.

Received, subject to classifications and tariffs in effect on the date of issue of this original bill of lading, at..... 190.., from ..... the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof), and which are agreed to by the shipper and accepted for himself and his assigns.

The surrender of this original order bill of lading properly indorsed shall be required before the delivery of the property. Inspection of property covered by this bill of lading will not be permitted unless provided by law, or unless permission is indorsed on this original bill of lading, or given in writing by the shipper.

Notes.—The foregoing will appear on the front or first page of the bill of lading.

In connection with the name of the party to whom the shipment is consigned the words "order of" shall prominently appear in print, thus:

"Consigned to order of ....."

The bill of lading is to be signed by the shipper and agent of the carrier issuing same, and space shall be provided for this purpose.

The detail arrangement respecting other matters that customarily appear on the face of the bill of lading, such as name of destination, car numbers, routing, description of articles, weights, &c., will be prescribed by the uniform bill of lading committee.

The size of the bill of lading shall be 8½ in. wide by 11 in. long.

Order bills of lading shall be printed on yellow paper for convenient distinction from bills of lading covering other than "order" consignments.

COPY OF NON-NEGOTIABLE BILL.

.....Railroad Company.

BILL OF LADING—ORIGINAL—NOT NEGOTIABLE.

Received, subject to classifications and tariffs in effect on the date of issue of this original bill of lading, at..... 190.., from ..... the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof), and which are agreed to by the shipper and accepted for himself and his assigns.

Notes.—The foregoing will appear on the front or first page of the bill of lading.

The bill of lading is to be signed by the shipper and agent of the carrier issuing same, and space shall be provided for this purpose.

The detail arrangement respecting other matters that customarily appear on the face of the bill of lading, such as name of destination, car numbers, routing, description of articles, weights, &c., will be prescribed by the uniform bill of lading committee.

The size of the bill of lading shall be 8½ in. wide by 11 in. long.

Bills of lading covering what may be termed "straight consignments," being those other than "order consignments," shall be printed on white paper.

Bills of lading other than those covering "order consignments" shall be stamped "not negotiable."

The following conditions will appear on the back of the bill of lading:

CONDITIONS.

Section 1. The carrier or party in possession of any of the property herein described shall be liable for any loss thereof or damage thereto, except as hereinafter provided.

No carrier or party in possession of any of the property herein described shall be liable for any loss thereof or damage thereto, or delay caused by the act of God, the public enemy, quarantine, the authority of law, or the act or default of the shipper or owner, or for differences in the weights of grain, seed or other commodities caused by natural shrinkage or discrepancies in elevator weights. For loss, damage or delay caused by fire occurring after 48 hr. (exclusive of legal holidays) after notice of the arrival of the property at destination or at port of export (if intended for export) has been duly sent or given, the carrier's liability shall be that of warehousemen only. Except in case of negligence of the carrier or party in possession (and the burden to prove freedom from such negligence shall be on the carrier or party in possession), the carrier or party in possession shall not be liable for loss, damage or delay occurring while the property is stopped and held in transit upon request of the shipper, owner or party entitled to make such request, or resulting from a defect or vice in the property or from riots or strikes. When in accordance with general custom, on account of the nature of the property, or when at the request of the shipper the property is transported in open cars the carrier or party in possession (except in case of loss or damage by fire, in which case the liability shall be the same as though the property had been carried in closed cars) shall be liable only for negligence, and the burden to prove freedom from such negligence shall be on the carrier or party in possession.

Sec. 2. In issuing this bill of lading this company agrees to transport only over its own line, and except as otherwise provided by law acts only as agent with respect to the portion of the route beyond its own line.

No carrier shall be liable for loss, damage or injury not occurring on its own road or its portion of the through route, nor after said property has been delivered to the next carrier, except as such liability is or may be imposed by law, but nothing contained in this bill of lading shall be deemed to exempt the initial carrier from any such liability so imposed.

Sec. 3. No carrier is bound to transport said property by any particular train or vessel, or in time for any particular market, or otherwise than with reasonable dispatch, unless by specific agreement indorsed hereon. Every carrier shall have the right in case of physical necessity to forward said property by any railroad or route between the point of shipment and the point of destination, but if such diversion shall be from a rail to a water route the liability of the carrier shall be the same as though the entire carriage were by rail.

The amount of any loss or damage for which any carrier is liable shall be computed on the basis of the value of the property (being the bona fide invoice price, if any, to the consignee, including the freight charges, if prepaid) at the place and time of shipment under this bill of lading, unless a lower value has been represented in writing by the shipper, or has been agreed upon or is determined by the classification or tariffs upon which the rate is based, in any of which events such lower value shall be the maximum amount to govern such computation, whether or not such loss or damage occurs from negligence.

Claims for loss, damage or delay must be made in writing to the carrier at the point of delivery, or at the point of origin, within four months after delivery of the property; or, in case of failure to make delivery, then within four months after a reasonable time for delivery has elapsed. Unless claims are so made the carrier shall not be liable.

Any carrier or party liable on account of loss of or damage to any of said property shall have the full benefit of any insurance that may have been effected upon or on account of said property, so far as this shall not avoid the policies or contracts of insurance.

Sec. 4. All property shall be subject to necessary cooperage and baling at owner's cost. Each carrier over whose route cotton is to be transported hereunder shall have the privilege, at its own cost and risk, of compressing the same for greater convenience in handling or forwarding, and shall not be held responsible for deviation or unavoidable delays in procuring such compression. Grain in bulk consigned to a point where there is a railroad, public or licensed elevator, may (unless otherwise expressly noted herein, and then if it is not promptly unloaded) be there delivered and placed with other grain of the same kind and grade without respect to ownership, and if so delivered shall be subject to a lien for elevator charges in addition to all other charges hereunder.

Sec. 5. Property not removed by the party entitled to receive it within 48 hr. (exclusive of legal holidays) after notice of its arrival has been duly sent or given may be kept in car, depot or place of delivery of the carrier, or warehouse, subject to a reasonable charge for storage, and to carrier's responsibility as warehouseman only, or may be, at the option of the carrier, removed to and stored in a public or licensed warehouse at the cost of the owner, and there held at the owner's risk and without liability on the part of the carrier, and subject to a lien for all freight and other lawful charges, including a reasonable charge for storage.

The carrier may make a reasonable charge for the detention of any vessel or car, or for the use of tracks after the car has been held 48 hr. (exclusive of legal holidays), for loading or unloading, and may add such charge to all other charges hereunder and hold such property subject to a lien therefor. Nothing in this section shall be construed as lessening the time allowed by law or as setting aside any local rule affecting car service or storage.

Property destined to or taken from a station, wharf or landing at which there is no regularly appointed agent shall be entirely at risk of owner after unloaded from cars or vessels, or until loaded into cars or vessels, and when received from or delivered on private or other sidings, wharves or landings shall be at owner's risk until the cars are attached to and after they are detached from trains.

Sec. 6. No carrier will carry or be liable in any way for any documents, specie, or for any articles of extraordinary value not specifically rated in the published classification or tariffs unless a special agreement to do so, and a stipulated value of the articles are indorsed hereon.

Sec. 7. Every party, whether principal or agent, shipping explosive or dangerous goods, without previous full written disclosure to the carrier of their nature, shall be liable for all loss or damage caused thereby, and such goods may be warehoused at owner's risk and expense, or destroyed without compensation.

Sec. 8. The owner or consignee shall pay the freight and all other lawful charges accruing on said property, and if required shall pay the same before delivery. If upon inspection it is ascertained that the articles shipped are not those described in this bill of lading, the freight charges must be paid upon the articles actually shipped.

Sec. 9. Except in case of diversion from rail to water route, which is provided for in section 3 hereof, if all or any part of said property is carried by water over any part of said route, such water carriage shall be performed subject to the liability, limitations and exemptions provided by statute, and to the conditions contained in this bill of lading not inconsistent with such statutes or this section, and subject also to the condition that no carrier or party in possession shall be liable for any loss or damage resulting from the perils of the lakes, sea or other waters, or from explosion, bursting of boilers, breakage of shafts, or any latent defect in hull, machinery or appurtenances, or from collision, stranding or other accidents of navigation, or from prolongation of the voyage. And any vessel carrying any or all of the property herein described shall have the liberty to call at intermediate ports, to tow and be towed, and assist vessels in distress, and to deviate for the purpose of saving life or property.

The term "water carriage" in this section shall not be construed as including lighterage across rivers or in lake or other harbors, and the liability for such lighterage shall be governed by the other sections of this instrument.

Sec. 10. Any alteration, addition or erasure in this bill of lading which shall be made without an indorsement thereof hereon, signed by the agent of the carrier issuing this bill of lading shall be without effect, and this bill of lading shall be enforceable according to its original tenor.

NEWS OF THE WORKS.

Iron and Steel.

The Niles Iron & Steel Company, Niles, Ohio, has under construction large additions to its plant which will enable it to increase the output of eaves trough and conductor pipe, pressed steel seats, cultivator shields and other steel stamping pieces, which are manufactured only for large jobbers. The company is erecting a one-story building of steel construction, 74 x 260 ft., one-half of which will be used for the stamping department and the other half for the eaves trough and conductor pipe department, to be in charge of R. G. Bird. The necessary machinery has been purchased and the plant will be in operation by July 25.

Under a reorganization recently effected, the Texas Rolling Mill Company, Fort Worth, Texas, incorporated with a capital stock of $160,000, has succeeded the Fort Worth Iron & Steel Company. The plant, which has been shut down for some time, will be modernized and equipped to produce 100 tons of merchant bars daily, besides cotton ties and track spikes and bolts. The officers of the new organization are Geo. W. Armstrong, president; W. H. Mills, vice-president; E. A. Hughes, secretary and manager.

The No. 1 Etowah furnace of the Alabama Consolidated Coal & Iron Company, at Gadsden, Ala., has been banked.

The Edgewater Iron Company, recently incorporated, has purchased the Lebanon Valley Furnace from the Lebanon Valley Furnace Company, Lebanon, Pa., and a 196th interest in the Cornwall Iron Ore Banks, Cornwall, Pa., for $220,000. The directors of the new company are Gen. E. Burd Grubb, president of the Lebanon Valley Furnace Company; George L. Record and L. W. Richardson, assistant treasurer and manager of the Lebanon Valley Furnace Company.

The rolling mill formerly operated by the Seidel & Hastings Company at the foot of East Tenth street, Wilmington, Del., has been purchased by the Keystone Steel Company, which is understood to be making alterations preparatory to placing the mill in operation at an early date. The plant has been idle for some time.

General Machinery.

The Auto-Fedan Hay Press Company, formerly located at Topeka, Kan., has moved to Kansas City, Mo., where it occupies a new factory just completed at the suburban town of Rosedale. The present plant is about three times the size of the old one, and its equipment has been augmented by the installation of considerable new machinery. The contemplated establishment of switch track connections with the 'Frisco Line will furnish convenient shipping facilities for in and out carload freight. The offices of the company are at 1521 West Twelfth street.

The Frick Company, Waynesboro, Pa., manufacturer of ice and refrigerating machinery, recently contracted through Otto C. Arens, its Pittsburgh representative, with the Fort Pitt Hotel of that city for a complete 30-ton Eclipse refrigerating plant. The hotel has been operating in its present establishment a 15-ton Eclipse machine, and this with the one just contracted for will be moved to the new addition when it is completed.

The Thomas Carlin's Sons Company, 1600 River avenue, N. S., Pittsburgh, builder of shears and grinding pans for iron and steel works and contractors' equipment, has orders on its books for medium sized shears for shipment to Hamilton, Ohio; Newark, N. J., and Elyria, Ohio, and recently made shipments of medium sized shears to Buffalo and Syracuse, N. Y. It is also building a 54,000-lb. shear for a Philadelphia concern and one of 100,000 lb. for a company in Columbia, Pa. Last week it shipped two large hoisting engines to Mobile, Ala., for the United States Government, to be used in the erection of a breakwater for the Mobile Harbor. Another engine somewhat similar in construction was shipped to the Purglobe Coal Company, Columbus, Ohio.

C. B. Eads and associates, Eunice, La., will erect a new machine shop on North Second street, for which two lathes, a drill press, shaper, emery grinder and small tools will be required. The shop will not be open for business before the first of next year.

The Oakley & Jansen Machine Company, Parkersburg, W. Va., whose plant is at 101-103 First street, has incorporated, with a capital stock of $50,000, to manufacture a special line of patented belt sanding and grinding machines for grinding and polishing brass, iron, steel and other metals. E. N. Jansen is general manager.

W. A. Crandall, Binghamton, N. Y., has opened a modernly equipped machine shop at 227-229 Water street, where he will do general machine work, making a specialty of gas, gasoline, automobile and marine engine repairs. Mr. Crandall has built several marine engines and has orders on hand for several of this type.

Power Plant Equipment.

Articles have been filed for the incorporation of two companies at Virginia City, Mont., the Easton-Pacific Company, with a capital stock of $100,000, and the Economic Power Company, with $200,000. The incorporators of the two companies are identical, being W. A. Clark, Mary R. Elling and J. H. Pankey of Virginia City.

The Parker Boiler Company, Philadelphia, Pa., has recently completed the third order from Michigan College of Mines, Houghton, Mich., for one 268-hp. unit, which already has two 120-hp. units, one installed in 1901 and the other in 1904. The company has also received an order from United Verde Copper Company, Jerome, Ariz., for two 265-hp. boilers equipped with superheaters, and one from the Belen Mining Company, Nacozari, Sonora, Mexico, for two 130-hp. units.

The Board of Health, New York, will receive bids until July 29 for two boilers for the boiler house of the Kingston Avenue Hospital, Brooklyn.

The Town Clerk of Fairview, Okla., will receive bids until August 14 for one 45-kw. alternating current generator and exciter, one 60-kw. alternating current generator and exciter, one 400-gal. single acting triplex power pump, one 300-gal. double acting triplex power pump and two 100-hp. gas producer units.

The Town Council of Emporia, Va., is taking bids on one 50-hp. improved gasoline engine and one single acting duplex power pump direct connected to engine.

Foundries.

The E. Killing Molding Machine Works, Davenport, Iowa, has under erection a new foundry, 50 x 100 ft. The company does general jobbing work and makes a specialty of sash weights molded on the Killing molding machine. All contracts for material in connection with improvements planned have been let.

Pursuant to an increase in capital stock from $100,000 to $200,000, the Union Foundry Company, Anniston, Ala., has begun work on new plant extensions that will largely increase the capacity of the foundry. It is stated that practically all the additional machinery required has been bought. Soil pipe and fittings constitute the product of the plant, which when completed will have a maximum capacity of 20,000 tons.

R. L Ahles, president of the Sweet's Steel Company, Williamsport, Pa., has purchased the plant of the Demorest Mfg. Company and will reorganize the business under the name of the Lycoming Foundry & Machine Company. The new company will do a general foundry and machine business, making a specialty of high grade castings and special machinery, and will also continue the manufacture of sewing machines and operate the japanning and nickeling departments. The fact that Mr. Ahles is president of both companies has led to the circulation of incorrect reports that the Sweet's Steel Company will occupy part of the buildings.

Bridges and Buildings.

The Penn Bridge Company, Beaver Falls, Pa., fabricator and erector of structural material, last week made shipment of two large crane girders, each 123 ft. long and 8 ft. deep, and weighing 75 tons. The girders were designed by the Alliance Machine Company for electric cranes. The company is shipping material for a steel frame building being erected by the Government at the Bremerton Navy Yard, Washington, D. C.; a Government coaling station at San Diego, Cal., and recently completed the shipment of a large quantity of structural steel to Panama for use in the construction of railroad bridges.

Fires.

The farm machinery plant of S. H. Sargent & Son, Castleton, Vt., was burned July 17, the loss being about $15,000.

The plant of the Stockham Pipe & Fittings Company, Birmingham, Ala., was damaged $25,000 by fire July 12.

The garage owned by D. W. Pratt, at Bedford avenue, near Atlantic avenue, Brooklyn, N. Y., was practically destroyed by fire July 18, the loss being about $30,000.

The main building of the Elk Tanning Company, Everett, Pa., was burned July 17. The loss on the buildings, machinery and stock is estimated at $150,000.

The factory of the Greenpoint Metallic Bed Company, Brooklyn, N. Y., was badly damaged by fire July 14, the loss being estimated at $30,000.

Hardware.

The Humphrey-Jones Paint Company, Denver, Colo., is enlarging its facilities by the erection of a three-story warehouse and factory building adjacent to the Denver & Rio Grande tracks. The new buildings will be equipped with improved machinery for the manufacture and distribution of mixed paints. Underground vaults will be provided for the storage of oils, which will be drawn to the various departments in the building by measuring pumps. It is expected that the new plant will be ready for occupancy by September 1.

A two-story brick addition to the large factory of the Patton Paint Company, Milwaukee, Wis., is now in course of construction. The dry color works are being moved into a recently purchased building just opposite the plant, which will triple the capacity of this department; the buildings heretofore occupied by the dry color works will be used for other purposes. It is expected that by the first of the year every department of the Milwaukee works will be doubled in capacity and that of the Newark, N. J., factory will also be largely increased.

The Ward Fence Company, formerly located at Marion, Ind., is moving its entire plant to Decatur, Ind., where it has erected new and modern factory buildings especially adapted to the requirements of its business. The company makes a complete line of farm and ornamental wire fencing.

The Iron and Metal Trades

Improvement continues slow, and is somewhat spotty, with some complaint of irregularity in prices in some finished lines. Leaders in the steel industry object to the efforts to boom the business and do not expect a return to normal conditions until next spring.

Pig Iron has been quiet in all the leading markets, and so far as the Southern producers are concerned the willingness to meet $11.50 base for No. 2 Foundry, at Birmingham, in distant competitive markets is increasing.

Philadelphia reports the sale of an additional lot of 3000 tons of Basic Pig at $15.45, for the last quarter, which is higher than was accepted last week, for delivery during the second half at the same point. In the same market there has been a transaction involving 26,000 tons of Forge Iron, which is virtually an extension of a present contract into mid-year, the price being based on a sliding scale.

Some low prices have again been made in Cast Iron Pipe, a lot of 1700 tons for Boston having been taken at $22.50. Low figures were also made on about 2700 tons for delivery at Albany. A contract for 6400 tons for Havana was secured by the same shop on the Delaware. The order for 3000 tons for Dallas, Texas, was divided. Bids are going in for 4200 tons for Brookline, Mass., and there is a very considerable tonnage coming up for Mexico.

An interesting piece of work, calling for 20,000 tons of Steel Plates, is that of the Pipe line for the water service of Brooklyn. This work, which was up once before, is now to be pushed vigorously. Delaware shipyards have placed orders for close to 4000 tons, and a small job is up for a boat to be built on the Hudson River.

New Structural work is rather light. Chicago reports 6400 tons, including 3000 tons for the Chicago & Northwestern Railroad and 2200 tons for a building at Los Angeles, Cal.

Steel Rail business continues very light, but it is noticed that the demand for track supplies in small lots is rather urgent, indicating that there is more activity in track repairs.

An additional contract for 4000 tons of Steel Bars was closed in Chicago, the requirements of the implement makers now being quite generally provided for. Thus far specifications against these large contracts are coming along slowly, but that is to be expected at this season of the year.

The markets for Old Material are firmer, and more interest is being taken in them by both consumers and dealers.

While it is conceded that the purchases of Copper by domestic consumers are somewhat better, the movement has been much exaggerated. It does not look as though it could yet counterbalance the heavy production and the disposition of European financiers and consumers to call a halt on the heavy tonnage which is being put at them.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	July22, 1908.	July15, 1908.	June24, 1908.	July23, 1907.
PIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	$16.50	$16.50	$16.50	$22.50
Foundry No. 2, Southern, Cincinnati	*14.75*	15.00	15.25	23.75
Foundry No. 2, Local, Chicago	17.00	17.00	17.50	25.00
Bessemer, Pittsburgh	16.90	16.90	16.90	23.40
Gray Forge, Pittsburgh	14.90	14.90	14.90	22.90
Lake Superior Charcoal, Chicago	20.00	20.00	20.00	27.00
BILLETS, &c., Per Gross Ton:				
Bessemer Billets, Pittsburgh	25.00	25.00	25.00	30.00
Forging Billets, Pittsburgh	27.00	27.00	27.00	34.00
Open Hearth Billets, Phila	26.20	26.20	26.20	32.00
Wire Rods, Pittsburgh	33.00	33.00	33.00	36.50
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel Rails, Melting, Chicago	**13.00**	12.75	12.50	17.50
Steel Rails, Melting, Phila	13.50	13.50	13.50	17.75
Iron Rails, Chicago	**16.00**	16.00	15.50	21.50
Iron Rails, Philadelphia	18.00	18.00	18.00	25.00
Car Wheels, Chicago	13.00	13.00	13.00	24.00
Car Wheels, Philadelphia	13.50	13.50	13.50	25.00
Heavy Steel Scrap, Pittsburgh	**14.75**	14.00	13.25	18.00
Heavy Steel Scrap, Chicago	**12.00**	11.50	11.50	15.50
Heavy Steel Scrap, Phila	**14.00**	14.00	13.50	17.50
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	*1.35*	1.35	1.40	1.83½
Common Iron Bars, Chicago	1.50	1.50	1.50	1.78
Common Iron Bars, Pittsburgh	1.40	1.40	1.40	1.70
Steel Bars, Tidewater, New York	1.56	1.56	1.56	1.86
Steel Bars, Pittsburgh	1.40	1.40	1.40	1.60
Tank Plates, Tidewater, New York	1.76	1.76	1.76	1.86
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.70
Beams, Tidewater, New York	1.76	1.76	1.76	1.86
Beams, Pittsburgh	1.60	1.60	1.60	1.70
Angles, Tidewater, New York	1.76	1.76	1.76	1.86
Angles, Pittsburgh	1.60	1.60	1.60	1.70
Skelp, Grooved Steel, Pittsburgh	1.45	1.45	1.45	1.90
Skelp, Sheared Steel, Pittsburgh	1.50	1.50	1.50	1.90
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.40	2.40	2.40	2.50
Wire Nails, Pittsburgh	1.95	1.95	1.95	2.00
Cut Nails, Pittsburgh	1.75	1.75	1.75	2.05
Barb Wire, Galv., Pittsburgh	2.40	2.40	2.40	2.45
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	13.00	12.97½	13.00	21.50
Electrolytic Copper, New York	*12.75*	12.75	12.87½	21.00
Spelter, New York	4.45	4.45	4.55	6.00
Spelter, St. Louis	4.35	4.30	4.40	5.80
Lead, New York	4.47½	4.45	4.50	5.25
Lead, St. Louis	4.32½	4.27½	4.40	5.00
Tin, New York	**29.75**	29.20	27.60	41.15
Antimony, Hallett, New York	*8.25*	8.25	8.50	10.50
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York	$3.89	$3.89	$3.89	$4.09

Chicago.

FISHER BUILDING, July 22, 1908.—(*By Telegraph.*)

Viewed as a whole, the market trend is forward. The main force back of the advance so far made toward normal conditions is the soundness and strength of agriculture. This has made possible and even necessary increased hours of work and in some cases the employment of more men in repair shops, which in turn means the use of more material. While the increase of tonnage coming to the Iron and Steel mills on this account is relatively small, yet even the moderate demand for railroad supplies thus created is beneficially reflected in many lines. Fabricators made a little better showing last week, the business taken footing up 6400 tons. The bids on some recent contracts indicate a growing inclination by fabricators to end the extreme price cutting that has well nigh eliminated all possibility of profit in the work. The entering of Steel Bar contracts being now almost completed, the point of interest shifts to specifications against them. These are not expected in any great volume for some weeks, though they should begin to come in pretty freely in August. Scrap Material not only held last week's advance, but prices on the leading grades are pushed up a notch or two. Rolling Steel Rails are being eagerly sought by dealers, with more demand from consumers. The 2500 tons in the Illinois Central's list closed on Monday is reported to have brought $16.10, half the tonnage being taken by a dealer and half by a consumer.

Pig Iron.—The very limited tonnage included in last week's transactions further emphasizes the lessened demand.

Carload orders for early shipment formed a major part of the business, with here and there a lot of from 100 to 300 tons. Buyers show no interest in forward deliveries. No inquiries of moment for second half, and none at all for last quarter are coming out. While the leading Southern furnaces are generally holding at $12, Birmingham, for No. 2 Foundry, and in view of their undelivered tonnage on forward contracts, they are hardly in position to recede from this position, in any event at present. Prompt and even third quarter iron is now to be had at $11.50 and $11.75, Birmingham, basis. Most of the sales reported at these prices have been from the high phosphorus producers of Northern Alabama and Tennessee. The situation in Northern Iron is unchanged since last reports, save that orders are fewer and lighter. No evidence of an effective increase of melt among the jobbing founders has yet appeared, but besides some actual improvement seen in the melt of interests connected with or related to the farm and implement machinery industry, the prospect for continued increase in such plants is good. Much now depends upon the ability of consumers to use Iron already purchased, and when it is demonstrated that shipments will be accepted according to contract schedules, the time will be ripe for consideration of fourth quarter requirements. We quote as follows for August and September delivery:

Lake Superior Charcoal	$20.00 to $20.50
Northern Coke Foundry, No. 1	17.50 to 18.00
Northern Coke Foundry, No. 2	17.00 to 17.50
Northern Coke Foundry, No. 3	16.50 to 17.00
Northern Scotch, No. 1	18.00 to 18.50
Southern Coke, No. 1	16.35 to 16.85
Southern Coke, No. 2	15.85 to 16.35
Southern Coke, No. 3	15.35 to 15.85
Southern Coke, No. 4	14.85 to 15.35
Southern Coke, No. 1 Soft	16.35 to 16.85
Soutnern Coke, No. 2 Soft	15.85 to 16.35
Southern Gray Forge	13.85 to 14.35
Southern Mottled	13.35 to 13.85
Malleable Bessemer	17.50 to 18.00
Standard Bessemer	18.40 to 18.90
Jackson Co. and Kentucky Silvery, 6 %	19.90 to 20.40
Jackson Co. and Kentucky Silvery, 8 %	20.90 to 21.40
Jackson Co. and Kentucky Silvery, 10 %	22.90 to 23.40

(By Mail.)

Billets and Rods.—Beyond occasional small orders for Forging Billets, there are no transactions to record. Market conditions and prices are unchanged, with Forging Billets quoted and firmly held at $28.50, base, Chicago. Wire Rods, in which there is only a light movement, we quote: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

Rails and Track Supplies.—No new Rail orders of importance are heard of in the market; indeed, the prospect for an early change from existing conditions is not at all flattering. Specifications for Spikes, Bolts and Track Supplies continue to improve slowly. Besides one order for 3000 kegs of Bolts from a Western road taken by the principal interest last week, a number of smaller orders of fair size were entered. Activity in Light Rails is maintained in a moderate degree, with a tendency toward more uniformity in prices. The extreme concessions of $5 and in some instances as much as $7 a ton that have heretofore been made are no longer obtainable in the Western market, and the limit of shading from regular prices does not in the main exceed $3 per ton. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.20c. to 2.25c., base, Square Nuts, and 2.35c. to 2.40c., base, Hexagonal Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $28; 20-lb., $29; 16-lb., $30; 12-lb., $31. Standard Sections, $28, f.o.b. mill, full freight to destination.

Structural Material.—Though still subject to the same retarding influence that has been operating to stay the placing of material for a number of important contracts, the market was somewhat more active than in the previous week. Contracts amounting to a little over 6400 tons were placed. The transactions included in this tonnage were 2950 tons of miscellaneous bridge and track elevation material for the Chicago & Northwestern Railroad, 2200 tons of which are taken by the American Bridge Company, which also booked 1152 tons in smaller orders; 2262 tons for the Nelson Story Building, Los Angeles, secured by the Llewellyn Iron Works, Los Angeles, Cal., and 55 tons for the Paahua Sugar Plantation Company, Hawaii, which went to the United States Steel Products Export Company. Mill specifications, though slightly improved, are still light. The structural mill at the South Works of the Illinois Steel Company will likely continue in operation until August 1, at least. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

Plates.—The movement in Plates gathers momentum very slowly. Owing to the extreme reduction of stocks in the hands of jobbers, these interests are being compelled to order more frequently for replenishment, but little disposition is shown to increase holdings to provide for prospective requirements. Prices are unchanged. It is still possible to place orders for narrow Plates with a few mills at from $1 to $1.50 under regular quotations. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier up to 72-in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

Sheets.—No change is observed in the mill demand for Sheets. The Indiana Harbor plant is running four of its 10 mills. Some improvement in orders from store is noted by jobbers, seemingly due to gradually increasing consumption in the smaller shops and manufacturing plants. With the exception of prices on Blue Annealed Sheets, quotations on which are reduced 5c. per 100 lb., prices are unchanged. Mill prices continue to be evenly held, save for the occasional shading of $1 to $1.50 per ton by a few small mills. We quote mill shipments as follows: Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c; Galvanized Sheets Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

Bars.—In addition to a number of smaller orders, the leading interest has taken a contract for 4000 tons of Steel Bars within the past week. Outside of some scattering orders the requirements of the trade are thought to be now pretty well taken care of. Specifications show no falling off and are, perhaps, better than a week ago. The demand for Iron Bars is up to the standard of recent weeks, which means that specifications for immediate shipment have not declined. The settlement of wage scales for the ensuing year by the Republic Iron & Steel Company removes from the situation a possible factor of disturbance. Owing to the shutdown at the present time of all but two of the Bar mills in this district, those in operation are better supplied with specifications and are running fuller. No deviation of consequence from regular prices is reported. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

Merchant Pipe.—While the increase in the volume of business coming out is scarcely measureable from week to week, it is enough to make a definite showing. The demand consists principally of jobbers' orders, which are not as yet covering anything beyond current requirements. From this it is understood that whatever gains are shown in the tonnage entered means a corresponding increase of consumption. Prices continue unchanged and firm. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

Boiler Tubes.—The anticipated increase of railroad buying of Locomotive Tubes for repair work is being realized in a measure. Not much is doing in Merchant Tubes, though jobbers report a slightly better movement than in previous weeks. Mill quotations for future delivery, on the base sizes, are as follows: Steel Tubes, 63.2; Iron, 50.2; Seamless, 49; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1½ in.	35	35	35
1⅝ to 2¼ in.	50	35	35
2½ in.	52½	35	35
2¾ to 5 in.	60	47½	47½
6 in. and larger	50	35	..

Merchant Steel.—Last week developed a fair amount of forward contracts, mainly from the Implement interests. Specifications, however, continue to lag and the demand for Shafting is limited to small lots for prompt shipment. We quote: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is

allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finished, 1½ in. and wider, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60., all f.o.b., at mill.

Cast Iron Pipe.—From the inquiries received, it is inferred that the small buyers are beginning to evince a little more interest in the market, but this has not so far taken the form of an increased demand. Lettings last week by Mansfield, Ohio, of 500 tons, and Newton Falls, Ohio, of 250 tons were made to the United States Cast Iron Pipe & Foundry Company. Bids are being opened to-day (Monday) on 500 tons, to be let by West Branch, Michigan, and this week awards of 330 tons by Burlington, Wis., and 1000 tons by Milwaukee, Wis., are expected. Gas Pipe in sizes from 4 to 10 in. is in fairly good demand. There is no abatement in the competition for the meager tonnage offered.

Old Material.—The market is distinctly stronger, and prices on several kinds, including Old Steel Rails, Heavy Melting Steel and Pipes and Flues, have firmed up considerably under a stronger buying movement. Added to the impetus given by an upward turn in the western Pennsylvania markets are inquiries from mill interests which seem to foreshadow a better local demand. Some important Foundry concerns have inquiries out for fair amounts of melting stock, which has inspired the hope of something more from consumers than the small orders which have constituted the only sign of activity seen in No. 1 Cast and Stove Plate for some time. The advance in Old Steel Rails is largely due to the efforts of dealers to cover for deliveries on recent short contracts made at low prices. Holders of this material are not anxious to let go short of $15, and some are holding for even higher prices. One lot of 1000 tons of No. 1 Wrought purchased by a local mill is reported to have brought $12.75. The railroad offerings for this week amount to 9800 tons, of which the Illinois Central has 5000 tons and the Chicago, Burlington & Quincy 4300 tons. Half of the former list is composed of Old Steel Rails. We quote per gross ton, f.o.b. Chicago, as follows:

Old Iron Rails	$16.00 to $16.50
Old Steel Rails, rerolling	14.75 to 15.25
Old Steel Rails, less than 3 ft	13.00 to 13.50
Relaying Rails, standard sections, subject to inspection	19.00 to 20.00
Old Car Wheels	13.00 to 13.50
Heavy Melting Steel Scrap	12.00 to 12.50
Frogs, Switches and Guards, cut apart	12.50 to 13.00
Mixed Steel	10.00 to 10.50

The following quotations are per net ton:

Iron Fish Plates	$14.50 to $15.00
Iron Car Axles	17.00 to 17.50
Steel Car Axles	15.50 to 16.00
No. 1 Railroad Wrought	12.25 to 12.75
No. 2 Railroad Wrought	11.25 to 11.75
Railway Springs	11.75 to 12.25
Locomotive Tires, smooth	12.75 to 13.25
No. 1 Dealers' Forge	9.75 to 10.25
Mixed Busheling	7.50 to 8.00
Iron Axle Turnings	6.00 to 6.50
Soft Steel Axle Turnings	6.00 to 6.50
Machine Shop Turnings	6.00 to 6.50
Cast Borings	4.75 to 5.25
Mixed Borings, &c	4.75 to 5.25
No. 1 Mill	6.50 to 7.00
No. 2 Mill	5.50 to 6.00
No. 1 Boilers, cut to Sheets and Rings	8.25 to 8.75
No. 1 Cast Scrap	12.00 to 12.50
Stove Plate and Light Cast Scrap	10.50 to 11.00
Railroad Malleable	11.50 to 12.00
Agricultural Malleable	10.50 to 11.00
Pipes and Flues	9.00 to 9.50

Metals.—Not much fluctuation is seen in the general volume of business in Metals. The large consumers of Copper are not in the market for anything more than small lots, and the smaller users are buying from hand to mouth as they have been doing. The demand for Spelter is exceedingly light, while Lead is a trifle more active this week. We quote as follows: Casting Copper, 13¼c.; Lake, 13½c. to 13¾c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 30c.; small lots, 32c.; Lead, Desilverized, 4.45c. to 4.50c., for 50-ton lots; Corroding, 4.85c. to 4.95c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.85c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 12¾c.; Heavy Copper, 12¾c.; Copper Bottoms, 10⅝c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 9¾c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 24c.; Block Tin Pipe, 27c.

An impostor has been traveling through the Pacific Coast representing himself as a salesman of J. J. McCabe, New York, and attempting with some success to sell double spindle lathes. J. J. McCabe has no traveling men on the Pacific Coast, the sale of his double spindle lathes being handled by Harron, Ricard & McCone, at San Francisco and Los Angeles, Cal., and the Hallidie Machinery Company, Seattle and Spokane, Wash.

Cincinnati.

CINCINNATI, OHIO, July 22, 1908.—(*By Telegraph.*)

While there has been comparatively little gain in the Iron market during the week, there is a distinct improvement in machinery lines, and foundrymen are taking heart. Orders for tools in the past few days have been larger, and call for more expensive types. Reports from the railroad offices indicate that the transportation companies are not yet a factor in this improvement, but it is believed they must soon be, because of the immense crops to be moved. The chief executive of a large interest in the South who was in the city to-day, having just come from Alabama, advises that the troubles from the coal miners' strike are lessening, but that the additions to cost in various ways and the unavoidable curtailment of output will soon have the effect of stiffening the price of Southern Iron. The vacation season is on, and heads of most large concerns are taking full advantage of the lull. Collections are not as good as they were reported a month ago, but money is easy, and a number of local improvements which will require Steel and Iron are receiving attention of the financiers.

Pig Iron.—There is weakening toward the $11.50 basis price for Southern No. 2, although most agencies refuse to quote lower than $12, Birmingham. Such quite frankly confess that they lose the business. One large interest which quotes the $12 price for the third quarter announces that $13.50 is its price for the fourth quarter. Northern Irons remain at $15, Hanging Rock Furnace, although there are reports that the price is being shaded. The Pipe interests are buying, but transactions are negotiated, for the most part, through the furnace officials, and prices are guarded. Jackson County Silvery is still quoted at $18.50 for 8 per cent., but some agents contend that one of the new producers has taken introductory business at lower prices. In contrast is the sale of two lots recently of the same grade from an established furnace at $21.50. The Southern furnace, which recently went in blast on Ferro Phosphorus, is reported to have a promising order book, with the price about $42, at furnace. The feature of the market the past week has been the preponderance of carload orders for quick shipment. A number of inquiries for Foundry, Bessemer and Basic Iron are still pending, and a few have been withdrawn. A Central Ohio concern is inquiring for from 1250 to 2500 tons of Northern Iron for the third quarter, and also 500 to 1000 tons of low grade, on an analysis basis, same delivery. An Ohio buyer has asked prices on 3000 tons of Steel making Iron for delivery in the last four months. Bessemer is quoted at about $15.75, Ironton, Ohio. There is but little inquiry for Basic in this immediate vicinity. For immediate delivery and to the close of the third quarter we quote, f.o.b. Cincinnati, as follows, freight rates being $3.25 from Birmingham, and $1.20 from the Hanging Rock District:

Southern Coke, No. 1	$15.25 to $15.75
Southern Coke, No. 2	14.75 to 15.25
Southern Coke, No. 3	14.25 to 14.75
Southern Coke, No. 4	14.00 to 14.50
Southern Coke, No. 1 Soft	15.25 to 15.75
Southern Coke, No. 2 Soft	14.75 to 15.25
Southern Coke, Gray Forge	13.75 to 14.25
Ohio Silvery, 8 per cent. Silicon	19.70
Lake Superior Coke, No. 1	16.70 to 17.20
Lake Superior Coke, No. 2	16.20 to 16.70
Lake Superior Coke, No. 3	15.70 to 16.20
Standard Southern Car Wheel	22.25 to 22.75
Lake Superior Car Wheel	21.75 to 22.25

(*By Mail.*)

Coke.—There is little change in the market save that the troubles in Alabama serve to stiffen prices on the Virginia product somewhat, and Wise County Furnace is strong at about $1.75, and foundry grades at about $2.25, on contract, while very little better can be done on spot shipments. Connellsville 72-hr. Foundry is selling at $2.25, on contract, and little better than $2.10 can be done on spot business. Some contracting is going on, but it is noticeable that Foundry Coke is practically all going East. There is talk of some very low prices being made on emergency sales of Pocahontas Coke, as low as $1.50 being quoted to move some delayed shipments.

Finished Iron and Steel.—The same lethargic conditions prevail in the Finished Material market and Sheets and Plates are, if anything, duller than last week. There is some further inquiry on Twisted Steel Bars for concrete work, on account of the beginning of a lot of public work, and Structural Material generally is receiving a little more attention. There is no change in retail prices and no likelihood of any, as dealers have an understanding which precludes the making of bargain prices as long as there is so little demand. Taking the local field of sellers into consideration, there is a little better feeling abroad. Money is considerably easier, and competition is not of a depressing character. Dealers quote as follows, f.o.b. Cincinnati: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and

Structural Angles, 1.85c., base; small lots from store, 2.10c.: Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10, and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

Old Material.—The dull period of the mills and melters generally finds a corresponding inactivity among the sellers of Scrap. This is the eve of the house cleaning time among railroads in this section, and some lists will be in preparation very soon. Meanwhile about the only business that is going here is in Stove Scrap and some occasional sacrifice sales of Melting Steel Scrap. As a rule the larger dealers here are holding firm and selling little. Prices f.o.b. Cincinnati, are about as follows:

No. 1 R. R. Wrought, net ton	$10.50 to $11.50
Cast Borings, net ton	4.00 to 5.00
Heavy Melting Steel Scrap	10.00 to 11.00
Steel Turnings, net ton	5.00 to 6.00
No. 1 Cast Scrap, net ton	10.25 to 11.25
Burnt Cast and Wrought, net ton	8.00 to 9.00
Old Iron Axles, net ton	14.50 to 15.50
Old Iron Rails, gross ton	13.00 to 14.00
Old Steel Rails, long, gross ton	10.50 to 11.50
Old Steel Rails, short, gross ton	11.00 to 12.00
Relaying Rails, 56 lb. and up, gross ton	20.00 to 21.00
Old Car Wheels, gross ton	12.00 to 13.00
Low Phosphorus Scrap, gross ton	13.00 to 14.00
Stove Plate, net ton	9.25 to 10.25

St. Louis.

ST. LOUIS, July 20, 1908.

The daily records of prospective work in building operations continue to be quite large and comprise churches, business and factory structures, and a number of residences. There are also several important public and semi-public buildings and an office building, on which contracts will soon be let, requiring considerable structural material. Increasing activity is noted in repair work by the railroads in this territory. Some of them are now in the market for pig iron and machine tools.

Coke.—The leading sellers report inquiry for delivery from July, 1908, to July, 1909; for immediate shipment the market is quiet. Prices show no change, at $2.15 to $2.50 for 72-hr., f.o.b. ovens, Connellsville. We hear of the sale of 5000 tons of Smelter Coke, delivery September to September, and 100 tons foundry 72-hr., delivery commencing with October, over a period of one year, and an inquiry for 500 tons, shipments through the year, beginning with August.

Pig Iron.—Inquiries are mainly confined to the last quarter of 1908, and the first quarter of 1909, for which deliveries considerable interest is manifested. Melters in this section are not carrying over 50 per cent. of last year's stocks, and for that reason sellers count on a steady demand. It is thought the strike in the coal district at Birmingham may tend to stiffen the price of Pig Iron. A leading house reports that inquiries this week exceed in volume those of the previous fortnight. We quote $12, f.o.b. Birmingham, for No. 2 Foundry, for last quarter.

Finished Iron and Steel.—The leading sellers find a satisfactory demand for Structural Steel, and the outlook encouraging. The demand continues good for Bars. Light Rails are fairly active, and the market is stronger. There is a steady increase in demand from railroads for all kinds of Track Material, especially Splice Bars, Bolts, and Spikes.

Lead and Spelter.—Lead and Zinc Ore are weaker, and more mines have closed down. At present only about 25 per cent. of the mines are open in the Joplin District. Spelter is quoted at 4.30c. Lead is offered at 4.40c., and dull, notwithstanding that price is below the cost of replacing. One important Spelter interest reports a good demand within the past few days. Inquiries are also being received for September-October shipments, but smelters are not disposed to quote so far ahead. The fact that some consumers consider it a favorable time to contract it is thought will lead to more activity.

Old Metals.—For certain classes of Old Material, prices have advanced, and demand continues good for Relayers, but Car Wheels and Cast Scrap are still neglected, and prices are nominal. On the whole, the market is stronger, with considerable improvement in tone and outlook. The only list out is that of the Cotton Belt Railroad for 600 tons miscellaneous Scrap Iron. We quote dealers' prices, per gross ton, f.o.b. cars, St. Louis, as follows:

Old Iron Rails	$14.50 to $15.00
Old Steel Rails, rerolling	13.25 to 13.75
Old Steel Rails, less than 3 ft.	12.50 to 13.00
Relaying Rails, standard sections, subject to inspection	22.50 to 23.50
Old Car Wheels	12.50 to 13.50
Heavy Melting Steel Scrap	13.00 to 13.50
Frogs, Switches and Guards, cut apart	12.50 to 13.00
Mixed Steel	9.00 to 9.50

The following quotations are per net ton:

Iron Fish Plates	$12.50 to $13.00
Iron Car Axles	16.00 to 16.50
No. 1 Railroad Wrought	12.25 to 12.50
No. 2 Railroad Wrought	10.50 to 11.50
Railway Springs	10.50 to 11.50
Locomotive Tires, smooth	12.00 to 12.50
No. 1 Dealers' Forge	9.50 to 10.00
Mixed Borings	4.00 to 4.50
No. 1 Boilers, cut to Sheets and Rings	7.00 to 8.00
No. 1 Cast Scrap	11.00 to 11.50
Stove Plate and Light Cast Scrap	9.00 to 9.50
Railroad Malleable	9.50 to 10.00
Agricultural Malleable	9.00 to 9.50
Pipes and Flues	8.00 to 8.50

It is reported that Pittsburgh and Youngstown interests have been buying Scrap in this market, which has stimulated prices.

A firm of local dealers has bought 1000 tons of Relaying Rails from one of the large Western railroads.

The Bethlehem Steel Company finds that architects and fabricators show a marked interest in the new Bethlehem sections in view of the saving claimed in the amount of Steel required.

The American Car & Foundry Company refers to a quite general resumption of repair work by the railroads, which is encouraging, as bringing nearer an improvement in demand for new cars.

A leading metal company reports trade better this month than last. The largest Steel interest reports that business for June was double that of May, and July promises well.

Birmingham.

BIRMINGHAM, ALA., July 20, 1908.

Pig Iron.—The tonnage of sales in the past week is considerably in excess of that for the week previous, although only one large transaction was recorded. This involved 4000 tons of No. 2 Soft and 6000 tons of No. 3 Foundry, for delivery in the remainder of the year to a Cast Iron Pipe company. The price is not made known, but there is reason to believe it was but slightly under $11.75, Birmingham, for No. 2 Foundry. The demand for prompt deliveries and for comparatively small lots has been met with figures around $12. In the case of bona fide offers of $11.50 for lots of 400 and 500 tons, respectively, the tonnage is known to have been refused. However, the conditions relative to the supply of fuel for furnace operation are such that a conservative course as to engagements for prompt delivery is apparently being pursued by all concerns. One of the leading producers has withdrawn from the market, while another large interest has been forced to curtail its output and adheres to prohibitive quotations. Inquiries are pending, but there is apparently no eagerness to cover for future needs, and the plan of making frequent purchases of limited quantities predominates. The present output of Foundry Iron is made by 13 stacks, and a recent estimate of stocks on furnace yards placed the aggregate at less than 100,000 tons. The accumulation of Charcoal Iron has been practically cleaned up. A recent sale of 750 tons is reported at $19.50, at furnace. There is no apparent change in the attitude of either party in the coal miners' strike. Furnace operators have in some cases found other than the usual sources for fuel, and in other cases further curtailment of present supply is not anticipated.

Old Material.—Dealers generally are more optimistic, but there has been but little change in conditions so far as actual transactions are concerned. A number of inquiries are pending, and an increased rate of consumption is indicated, but consumers continue to purchase sparingly. Quotations are unchanged, as follows, per gross ton, f.o.b. cars here:

Old Iron Rails	$14.50 to $15.00
Old Iron Axles	14.00 to 14.50
Old Steel Axles	12.50 to 13.00
No. 1 Railroad Wrought	13.00 to 13.50
No. 2 Railroad Wrought	9.00 to 10.00
No. 1 Country Wrought	10.50 to 11.00
No. 2 Country Wrought	9.00 to 9.50
No. 1 Machinery	10.00 to 10.50
No. 1 Steel	9.50 to 10.50
Wrought Pipe and Flues	8.50 to 9.00
Light Cast and Stove Plate	8.50 to 9.00
Cast Borings	5.00 to 5.50

Cast Iron Pipe.—In the past week an order for 3000 tons of Water Pipe, to be furnished Dallas, Texas, was divided between the United States Cast Iron Pipe & Foundry Company and the American Cast Iron Pipe Company. The R. D. Wood Company, Camden, N. J., was the successful bidder on 6400 tons of Water Pipe for Havana, Cuba, and the Katz-Craig Contracting Company, Omaha, Neb., secured the contract for Water Works extension, at Sheridan, Wyo. The Pipe required has not been purchased. Milwaukee, Wis., is to enter the market July 22 for a round tonnage, and reports from reliable sources indicate a large volume of business to come from Mexican points. It is estimated that something like 94,000 tons will ultimately be required. Quotations have been advanced by two producers, and on small lots the price thus established has been maintained, but re-

cent lettings of large proportions were at such figures that an advance in published quotations is not warranted. We quote as follows for Water Pipe, per net ton, f.o.b. cars here: 4 to 6 in., $23; 8 to 12 in., $22; over 12-in. average, $21, with $1 per ton extra for Gas pipe.

Pittsburgh.

PARK BUILDING, July 22, 1908.—(*By Telegraph.*)

Pig Iron.—We can report a sale of 10,000 tons of chill cast Bessemer for August, September, October delivery at $16 Valley furnace, or $16.90 delivered. Standard Bessemer is regularly quoted at $16, Valley furnace, although it is claimed that on small lots for early shipment this price can occasionally be shaded. At last reports the Canton interest which was inquiring for 4000 tons of Basic over the last four months of the year had not closed, but the order will doubtless go to a nearby furnace. The 8000 tons reported last week as sold to the Pittsburgh Steel Company at about $16 delivered Monessen, brought just a trifle above that price. Foundry Iron continues quiet and it is not certain that the nominal prices could not be shaded. We quote Standard Bessemer at $16, Valley furnace; Basic at $15 to $15.25 Valley; No. 2 Foundry at $14.75 to $15, Valley, and Gray Forge at $14, Valley.

Steel.—Occasionally sales of Sheet Bars are being made at full prices, while shipments are a trifle better. The Billet market continues quiet. The Republic Iron & Steel Company this week started its Bessemer Steel plant at Youngstown, after an idleness of three weeks. The principal product just now is Sheet Bars. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight or 50c. additional is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

It seems to be a pretty general opinion among Steel manufacturers that the moderate improvement in orders noted in most departments this month, as compared with last month, is not necessarily indicative of a continued increase in business with this as a foundation. It is pointed out that in June there was a great deal of uncertainty as to prices, while it was particularly desired to have inventory valuations as small as possible July 1, and this naturally led to the deferring of buying wherever possible. The nature of the orders received since July 1 indicates in many instances that it is simply business which was deferred from June, and manufacturers are anxious to avoid basing too optimistic predictions upon the showing thus made. Then again, it appears probable that the movement for a general advance in freight rates will have to be dropped, and less hopes of large railroad buying are entertained than was the case two or three weeks ago. At the same time, there are evidences here and there that buying of a sounder character than formerly has been started. Orders are being received for Railroad Spikes, for instance, from roads which have been out of the market for a long time, and these orders are being followed up with insistence upon prompt delivery, indicating that the railroads are actually doing more outside work. Mill operations in this section are distinctly better this week than last. The Republic Iron & Steel Company started its Bessemer Steel plant at Youngstown Sunday night, after an idleness of three weeks, and has Sheet Bar specifications accumulated indicating a steady run of at least a fortnight. The company started its largest rolling mill plant, the Brown-Bonnell, in full operation Monday morning, and to-night it will start the major part of the Mahoning Valley plant. These plants have been idle since the end of June, as have other rolling mills of the company, on account of the wage scale not being settled. The company signed the Detroit scale last Friday, and by the end of the week will have most of its plants in full or partial operation. The American Sheet & Tin Plate Company this week started nearly all the hot mills in its Tin Plate plants, which were closed last week on account of the hot mills having gotten ahead of the finishing departments. The company has also started a few additional Sheet mills and is doing better in the Sheet department than for a couple of months. The Carnegie Steel Company is operating this week 27 of its 54 completed blast furnaces, against 25 last week. The National Tube Company blew in an additional stack at McKeesport, and one more at Lorain. It has now three furnaces in blast at each point, there being 11 furnaces altogether. One of the regular meetings of the Carnegie Steel Company's district sales agents is being held in Pittsburgh Tuesday and Wednesday of this week. On Thursday, W. E. Corey, president of the Steel Corporation, will be here to confer with the heads of departments.

Ferromanganese.—The market for Ferromanganese is rather quiet, but prices are well held at $44, seaboard, or $45.95, Pittsburgh, for early delivery, and $44.50 to $45 for delivery in the last quarter.

Rods.—The Rod market continues quiet. We quote Bessemer Wire Rods at $33, Pittsburgh, Basic Wire Rods at $34, and Chain Rods at $33.

Muck Bar.—A little more activity is expected as the union mills have arranged the wage scale and are in position to do business again and promise deliveries. We quote the market at $36, Pittsburgh, for best grades of all pig Muck Bar.

Skelp.—Demand is small, with prices nominally as follows: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

Steel Rails.—The Edgar Thomson Rail plant continues in partial operation, and has been doing a little better in the way of tonnage than formerly. Very little new business is coming in, but there is a moderate volume of specifications on old contracts. In Light Rails very little business is going, but the rerolling mills are making a strong effort to secure better prices, as Rerolling Rails have scored another advance of 50c. or so in the week. We quote Light Rails unchanged, at $23 to $24, but there is less willingness than formerly to quote the lower price, whereas a few weeks ago it was quite liberally shaded. We repeat regular quotations as follows: 25 to 45 lb. Sections, $28; 20-lb., $29; 16-lb., $30, and $12-lb., $32. We quote Standard Sections at $28, at mill, and Angle Splice Bars at 1.65c., at mill.

Plates.—A moderate amount of hurry up business is coming into the market, and this, with the work on a few old contracts, serves to keep Plate mills on about the same gait as formerly. Occasionally some of the smaller mills, which do not make the full range of sizes, shade prices $1 to $1.50, but in general the regular market is well maintained. We quote Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot to take base price. Steel Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under ¼-in. to and including 3-16-in. Plates on thin edges	$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
"A. B. M. A." and ordinary Firebox Steel Plates	.20
Still Bottom Steel	.30
Marine Steel	.40
Locomotive Firebox Steel	.50
Shell grade of Steel is abandoned.	
For widths over 100 in. up to 110 in	.05
For widths over 110 in. up to 115 in	.10
For widths over 115 in. up to 120 in	.15
For widths over 120 in. up to 125 in	.25
For widths over 125 in. up to 130 in	.50
For widths over 130 in	1.00

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

Structural Material.—No Structural contracts of any magnitude have been booked in this district in the past two weeks. It is not expected that the new Oliver Building, which is estimated to require some 13,000 tons of Steel, will be definitely figured on for months to come. The Steel for the new Pittsburgh & Lake Erie bridge, at Beaver, Pa., the contract for which was awarded some weeks ago, will not come to the mills for about three months, as it is estimated that it will take about four months to get the job through the drafting department. We quote as follows, f.o.b. mill, Pittsburgh: I Beams, H Beams and Channels, 3 to 15 in., inclusive, 1.60c. net; Beams over 15 in., 1.70c. net; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c. net; Angles, over 6 in., 1.70c. net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c. net; Zees, 3 in. and up, 1.60c. net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c. net; Hand Rail Tees and Z-19, 3c. net; Checkered and Corrugated Plates, 3c. net.

Sheets.—There has been a good improvement in Sheet mill operations this week. The Youngstown Sheet & Tube Company started its Sheet department, which had been idle for three months. The American Sheet & Tin Plate Company is this week operating 86 of its Sheet mills, or 47 per cent. of the total, against about 40 per cent. for several weeks past. This is partly in consequence of the increase in business coming in noted in last week's report. While the Sheet trade does not expect full activity for months to come, the character of the orders coming in now is good ground for

a belief that there will be a moderately steady improvement from now on. The regular prices on Sheets are being fairly well maintained, and we continue to quote as follows for mill shipment: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

Tin Plate.—The American Sheet & Tin Plate Company this week started 47 of the 55 Tin mills it closed last week on account of accumulation of semifinished material, the Tin houses being kept in regular operation. The accumulation is pretty well worked off now, there being still some at the National Works, Monessen, where eight mills remain idle. One mill is idle at another plant. The company is operating this week 204 of its Tin mills, against 158 last week and 213 for many weeks previous. One of the smaller independents which was running only part time is now on in full, and the independents are operating as many Tin mills as at any time this year. It is not expected that the demand for Tin Plate shipments will hold out much longer, but substantially full operations are expected for the remainder of this month and the fore part of next, which is doing very well for the Tin Plate trade, since many mills usually close about July 1, and sometimes in the latter part of June. Tin Plate prices continue absolutely firm, and we quote at $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

Hoops and Bands.—Specifications are coming in at about the same rate as last week, with a moderate amount of new business. Regular prices are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

Iron and Steel Bars.—The Steel Bar mills are running at between 35 and 40 per cent. of normal, substantially the same as for the past two or three months. Orders against the large contracts booked early in June are coming in only at a moderate rate. The mills complain of the high cost of operation on the present character of business, as specifications are so mixed that it is necessary to change rolls very frequently, and this, with the low tonnage, shows up badly in the cost sheet. Specifications are coming in a little better for Iron Bars this week, as on the settlement of the wage scale the mills became able to promise deliveries again and have been inviting specifications. The Republic Iron & Steel Company signed the Detroit scale last Friday, and this week started the Brown-Bonnell plant, which is a Steel proposition, in full, while it is also starting a number of its other mills. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

Merchant Steel.—The market continues only seasonably active in most lines, while Shafting is decidedly dull. We quote: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron, finished, 1½ in. and wider, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

Railroad Spikes.—A decided change in the character of buying of Railroad Spikes is noted in the past week or 10 days. While no large orders are being received, there is a uniform insistence upon prompt shipment, and orders are decidedly more numerous, although of small volume, and are coming from a larger number of roads, some roads buying moderate lots for quick shipment, which have not been in the market at all for months. There is also a moderately fair demand for small Spikes, and some of the Spike departments are running this week at well above one-half their normal. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

Spelter.—We note a sale of a couple of carloads of Prime Western Spelter for prompt shipment at 4.32½c., St. Louis, or 4.45c., Pittsburgh, and a sale of 75 tons for September and October shipment at the same price, and the market is quotable at this price for prompt shipment, with a slight rise asked for single carloads for forward delivery.

Boiler Tubes.—The market remains rather quiet for Boiler Tubes, with a fair amount of business going in Locomotive Tubes for repair work. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ in.	42	47
1¾ to 2¼ in.	42	59
2½ in.	47	61
2¾ to 5 in.	52	65
6 to 13 in.	42	59

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

Merchant Pipe.—A fair business is being done in Merchant Pipe, comparing well with the tonnage in the second quarter. No large Line Pipe business has been placed lately, but the mills are fairly busy on old orders. Discounts on Steel Pipe, ¾ to 6 in., to the large trade are now 76 and 5 per cent. off list. Regular discounts are as follows:

Merchant Pipe.

	Jobbers, carloads, Steel.	
	Black.	Galv.
	%	%
⅛ to ¼ in.	67	51
⅜ in.	69	55
½ in.	71	59
¾ to 6 in.	75	65
7 to 12 in.	72	57
Extra strong, plain ends:		
⅛ to ⅜ in.	60	48
½ to 4 in.	67	55
4½ to 8 in.	63	51
Double extra strong, plain ends:		
½ to 8 in.	56	45

Discounts on Genuine Iron Pipe are as follows:

	Black.	Galv.
	%	%
⅛ to ¼ in.	65	..
⅜ in.	67	53
½ in.	69	57
¾ to 6 in.	73	63
7 to 12 in.	70	55
Extra strong, plain ends:		
⅛ to ⅜ in.	58	46
½ to 4 in.	65	53
4½ to 8 in.	61	49
Double extra strong, plain ends:		
½ to 8 in.	54	43

Iron and Steel Scrap.—A consumer in Pittsburgh has bought 1000 tons of Heavy Melting Steel at $15.25, delivered. The regulations as to size and character are more stringent than with the usual run of buyers. A Sharon interest has bought between 4000 and 5000 tons of Heavy Melting Steel, paying from $14.50 on up to $15.25, delivered, but getting only a small part of the tonnage at $14.50. The dealers had to go short on most of this material, as there is very little lying around, and in some quarters the fact that the dealers have loosened up, even though they got higher prices than formerly quoted, is taken as an evidence that with this latest advance the market has about found its level. The Rolling Mills are not buying to any extent, and the activity in scrap outside of open hearth material is almost entirely on the part of dealers, who have been bidding up prices nearly all along the line, and making small transactions among themselves. An open hearth interest in this district has taken between 1000 and 2000 tons of Cast Iron Borings, some of the material coming from the Chicago District, and paying an average of about $8.75, delivered. Rerolling mills have again increased their bids on Rerollers, as there is no material to be had at anything like the former bids. We advance nearly all grades of Scrap from 25c. to 75c., and now quote, as follows, per gross ton, f.o.b. Pittsburgh: Heavy Steel Scrap, for Pittsburgh, Steubenville and Sharon delivery, $14.75 to $15.25; Cast Iron Borings, $8.50; No. 1 Railroad Wrought Scrap, $13.75 to $14.25; No. 1 Cast Scrap, $14.25 to $14.75; Bundled Sheet Scrap, $11.50 to $12; Sheet Bar Crop Ends, $17.50 to $17.75; No. 1 Busheling Scrap, $13 to $13.50; No. 2 Busheling Scrap, $9.50 to $10; Iron Axles, $20 to $20.50; Steel Axles, $18.50 to $19; Low Phosphorus Melting Stock, 0.04 and under, $18 to $18.50; Old Steel Rails, short pieces, $14.75 to $15.25; Rerolling Rails, $15.50 to $16; Machine Shop Turnings, $8.75 to $9.25; Grate Bars, $12.25 to $12.50; Railroad Malleable Scrap, $13 to $13.50.

Coke.—Coke operations in the Connellsville regions continue to increase slightly in the aggregate, but the increase is due almost wholly to heavier operations by the Frick Company. Production last week in the Connellsville and Lower Connellsville regions aggregated 174,729 tons, against 165,472 tons the previous week, thus showing the largest gain for several weeks, and making the reported production the largest, by a slight margin, since last February. Furnace Coke for prompt shipment continues to be quoted at $1.60, for best grades, and 72-hr. Foundry at $2 to $2.25, at oven. On contracts for Furnace Coke for shipment over last half of the year, $1.80 to $1.90, at oven, is quoted.

Cleveland.

CLEVELAND, OHIO, July 21, 1908.

Iron Ore.—The slight activity that appeared in the market for a few weeks has entirely disappeared. Following the reduction in prices, representatives of Merchant Ore firms were very active for a few weeks in calling on their customers. The results, however, were somewhat disappointing. A few furnace interests covered for a portion of their year's requirements, but the majority are still holding off. They think that they will have no trouble in getting all the Ore they need later in the season, at a time when they can tell more definitely how much they will need. There are still a few inquiries coming in, but they do not result in the placing of contracts, and the present condition of the Pig Iron market does not encourage buying. Ore men who had expected a fair buying movement during July are now expecting consumers to hold off until about September 1. Owing to the limited production at the mines, some of the Ore men say that with buyers holding off so long there is a probability of a shortage of Ore at the mines late in the fall. Shipments from the mines have increased very slightly over June, and owing to the falling off in the movement of coal there is less business for the lake fleet than a month ago, with several boats for every cargo. With no prospects of an early improvement a number of boats have been laid up and others will probably go temporarily out of commission. Some Ore, not a great deal, is going forward to the furnaces from Lake Erie docks, last season's Ore being shipped to furnaces that have not yet bought any of this season's. Ore prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

Pig Iron.—Some good inquiries have come into the market during the week from outside this territory. Among these are two from Detroit stove concerns, one for 5000 tons and the other for 6000 tons, mostly Foundry Iron. A small portion is High Silicon Iron. It is expected that contracts for this Iron will be closed early this week. Another inquiry is for 3000 to 4000 tons of Foundry and Malleable Iron for a Dayton car company. Bids will be received until July 22. Furnaces are asked to submit proposals for the last quarter and for five months' delivery, beginning September 1. There are also some inquiries from Eastern consumers. Otherwise the market is very quiet, the sales of the week being limited to a very few small lots. Consumers in this city and other parts of this territory are practically all out of the market, those that did not place contracts during the recent buying movement still having plenty of Iron for their immediate requirements. A number are holding off for a further improvement in business. Prices remain stationary, but the market cannot be said to be very firm. Shipping orders on contracts are rather light, although they are slightly better than a month ago. We quote No. 2 Northern Foundry at $14.75 to $15, Valley furnace, the latter price being asked by nearly all of the furnace interests. Local furnaces quote No. 2 Foundry at $15, at furnace, for outside delivery, and about $15.50, delivered, Cleveland. There is little inquiry for Southern Iron. The market price seems to be $11.50, Birmingham, although some interests are still holding to $12. There is little inquiry for Bessemer, Malleable or Basic Iron. Some furnaces are accumulating larger stockpiles. For prompt shipment and for the balance of the year we quote, delivered, Cleveland, as follows:

Bessemer	$16.90
Northern Foundry, No. 1	$16.00 to 16.25
Northern Foundry, No. 2	15.50 to 15.75
Northern Foundry, No. 3	15.00 to 15.25
Southern Foundry, No. 2	15.85
Gray Forge	14.90

Coke.—Considerable spot Furnace Coke on the track has been thrown on the market during the past week, and has been sold around $1.50 to $1.60. The general market is very quiet in both grades, and inquiries are very scarce. For the last half delivery we quote Connellsville Furnace Coke at $1.75 to $1.85, at oven, and 72-hr. Foundry Coke at $2.25, at oven.

Finished Iron and Steel.—There is a fair improvement in the volume of specifications, particularly for Steel Bars, which causes a considerably better feeling regarding future conditions. Consumers are still ordering only for their immediate actual requirements, but these requirements are greater than they have been for the past few months. The Bar specifications include some from the implement makers. Additional Bar contracts were closed in the week and there are very few consumers who are not now under contract for the year. Some additional contracts have been closed by rerolling mills for Hard Steel Bars, the buyers being implement makers. Some fair Bar specifications have come from local jobbers. The demand for Iron Bars shows little if any improvement, although orders from railroads for repair work are showing up slightly better. The two local Bar mills that shut down July 3 are still idle, and it has not yet been decided when they will start up. In Plates there is also a slight improvement in the demand, although orders are all for small lots for immediate needs. The demand for Sheets shows no particular improvement. The contract for the Structural Steel for the new Bailey Building has been awarded to the Forest City Steel & Iron Company, Cleveland. About 1000 tons of Structural Material will be needed, but the erection will not be started before the first of the year. The contract will be closed soon for the Structural Steel for the new Pope Building, that will require in the neighborhood of 1000 tons. A factory building, for which plans are now being prepared, calling for some amount of Structural Material, is to be erected by the Goodrich Rubber Company, of Akron, Ohio. Current orders are very light, consumers being nearly all under contract. Prices on Iron and Steel Bars are being firmly maintained. The price of the narrower Plates is being shaded $1.50 per ton by some of the smaller mills, and some price concessions are being made in Sheets. Warehouse business continues quiet, but jobbers are not looking for much improvement in July. We quote Iron Bars at 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels out of stock are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

Old Material.—Prices are firmer as a result of the action of the dealers, who have advanced their quotations on several grades. While inquiries are slightly better, the strength that has developed is due entirely to the expectation that the demand will greatly improve within a short time. About the only sales of the past week have been trading among dealers and covering by the shorts. There are better inquiries for both Steel and Cast Scrap, but the majority of these inquiries are believed to be for the purpose of feeling the market. Dealers believe, however, that they will be followed by a fair buying movement, and in this way they have added strength to the market. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, several of which are advanced 50c. or more per ton over last week, are as follows:

Old Steel Rails	$13.00 to $13.50
Old Iron Rails	15.00 to 16.00
Steel Car Axles	17.50 to 18.00
Old Car Wheels	14.50 to 15.00
Relaying Rails, 50 lb. and over	22.00 to 23.00
Heavy Melting Steel	13.25 to 13.75
Railroad Malleable	12.00 to 12.50
Agricultural Malleable	11.00 to 11.50
Light Bundled Sheet Scrap	8.00 to 9.00

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles	$16.00 to $16.50
Cast Borings	6.00 to 6.50
Iron and Steel Turnings and Drillings	7.50 to 8.00
Steel Axle Turnings	8.50 to 9.00
No. 1 Busheling	11.50 to 12.00
No. 1 Railroad Wrought	13.00 to 13.50
No. 1 Cast	12.50 to 13.00
Stove Plate	10.00 to 10.50
Bundled Tin Scrap	8.00 to 9.00

Philadelphia.

PHILADELPHIA, PA., July 21, 1908.

The midsummer apathy is pronounced in the Iron and Steel market. The general tone, however, is strong; prices are, perhaps, a shade firmer, and while the volume of current business is not large, the outlook appears to be somewhat better. The trade is quite optimistic regarding business in the fall months, when a resumption in buying which will tend toward normal conditions is expected. Crops and the coming Presidential election are the principal factors mentioned as reasons for the waiting market.

Pig Iron.—There has been less buying in the week, but the general tone is stronger. Furnaces are booked up for the next month or so, and prices are being well maintained. With surplus stocks on furnace banks decreasing, there is not the same tendency to make concessions. The larger consumers have to a certain extent covered for their requirements in the near future and are showing more interest in Iron for fourth quarter delivery, as well as deliveries for the first quarter of next year. While sellers are willing to take business for strictly fourth quarter delivery at a slight advance over present prices, they hesitate when it comes to booking orders for next year, and pretty generally refuse to quote for such delivery. In some instances producers are out of the market for third quarter business, and while a large portion of their capacity is idle, there is no disposition to blow in additional furnaces at the present range of prices. No great change in consumption is expected during July and August. Iron foundries are not very actively engaged, and while some furnaces report better shipping instructions, no large increase in consumption is anticipated much before September 1. Sales of Foundry Iron have for

the most part been small and for prompt shipment. While $16.50, delivered, for No. 2 X Foundry can be done, a number of producers are holding firmly at $16.75 and $17 for that grade, and have booked some little business. In some cases sellers will accept $16.75 to $17 for No. 2 X Foundry for delivery over the entire half of the year, but when it comes to strictly fourth quarter delivery an advance of about 50c. a ton is asked for standard grades. Southern Iron has not been very active during the week. Little business outside of that transacted with the Cast Iron Pipe interests recently is reported, and while some furnaces are holding the $12, Birmingham, base, for No. 2 Foundry, others are understood to be shading that figure for prompt Iron. Virginia Foundry Irons are firm and in some instances better prices have been realized, a sale of 800 tons of No. 2 X Iron for third quarter delivery being reported at $15, furnace. This, however, appears to be exceptional, as $14 to $14.25, furnace, can still be done for this grade and delivery. The demand for Fore Iron has not been very heavy. Some scattered lots have been sold at the market for third quarter delivery, but furnaces as a rule are pretty well sold up on this grade. A sale of 26,000 tons of Forge for delivery next year was reported, it being virtually an extension of a present contract, the price being based on a sliding scale. There has been some further inquiry for Basic Iron, largely for forward delivery, and a sale of 3000 tons for fourth quarter shipment is reported at $15.45, delivered. For the entire last half delivery, however, it is believed that $15 to $15.25 could still be done, although some producers are now pretty well sold up on Basic. A little inquiry has been noted for Low Phosphorus Iron, but this is also somewhat scarce and the price is being well maintained. A sale of 600 tons of off grade is reported at $19.75, delivered. The general tone of the market continues strong. Inquiries, while not heavy, are fairly numerous, and considered good for the season of the year, and sellers in this territory are by no means inclined to exert any pressure to get tonnage. Prices are firm and range as follows for standard grades, delivered in buyers' yards, eastern Pennsylvania and nearby territory, during the third quarter; for strictly fourth quarter delivery an advance of about 50c. a ton rules, dependent on brand and tonnage:

Eastern Pennsylvania, No. 2 X Foundry	$16.50 to $17.00
Eastern Pennsylvania, No. 2 Plain	16.00 to 16.50
Virginia, No. 2 X Foundry	17.00
Virginia, No. 2 Plain	16.50 to 16.75
Gray Forge	15.00 to 15.50
Basic	15.00 to 15.50
Low Phosphorus	21.00 to 21.25

Ferromanganese.—Business in the week has been dull. Offerings have been made as low as $43.50, Baltimore, for small lots for prompt shipment, but this is believed to be largely on resales. For forward shipment, sellers still hold at $45 to $46, seaboard, but this price could probably be shaded.

Steel.—The demand for Billets is quiet. Consumers are understood to be taking more interest in the market, but are not yet ready to place orders. The local mills feel more encouraged regarding the future, but at the time are still idle. Quotations for deliveries in this territory are firm, $26.20 being named for ordinary Rolling Steel, with Forging Steel at $28.20, subject to the usual extras for high carbons and special sizes.

Plates.—While the demand continues somewhat irregular, there has been more tonnage placed and Plate makers feel encouraged regarding the situation. The bulk of the orders placed have been small and cover miscellaneous requirements. Contracts have been closed for several fair tonnages of Boat Steel, one for 2000 tons from a Wilmington shipyard, and another for 1800 tons from a Delaware River yard. Some little railroad business still continues to come out, but the demand for Locomotive Steel is hardly as large as it was a few weeks ago. Mills are rather better engaged and the output in some departments show an increase. Prices are being fully maintained and range as follows for delivery in this territory:

	Carloads. Cents.	Parts carload. Cents.
Tank, Bridge and Boat Steel	1.75	1.80
Flange or Boiler Steel	1.85	1.95
Commercial Firebox	1.95	2.00
Marine	2.15	2.20
Locomotive Firebox Steel	2.25	2.30

The above are base prices for ¼-in. and heavier. The following extras apply:

	Extra per 100 lb.
3-16-in. thick	$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 in.	.05
Plates over 110 to 115 in.	.10
Plates over 115 to 120 in.	.15
Plates over 120 to 125 in.	.25
Plates over 125 to 130 in.	.50
Plates over 130 in.	1.00

Structural Material.—There has been no marked improvement in the immediate demand. A fair run of business continues, but individual orders are not large. A considerable amount of bridge work for the city is now under contract, and plans have been approved by the Survey Department for a new bridge over the Schuylkill River, for which proposals will no doubt be asked shortly. While large propositions are somewhat scarce, and mills have made slight gains in the volume of business taken, the trade feels hopeful for the future. Prices are firm and unchanged at 1.75c. to 1.90c., according to specification for delivery in this territory.

Sheets.—The majority of the mills in this territory continue in operation on full time, but are still dependent on current orders to keep them so occupied. The business coming out is somewhat better in the aggregate, although orders individually are small and for prompt shipment. Prices are as follows for mill shipments, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

Bars.—The demand for Refined Iron Bars has been somewhat more active, buyers show more disposition to come into the market, and there is less tendency shown on the part of the mills to shade quotations. Sellers are not inclined to accept orders for future delivery at the recent low quotations, and prices show more firmness. For desirable specifications for prompt shipment, 1.35c., delivered in this territory has been done, but some mills hold at 1.40c. to 1.45c., delivered, for the general run of business. Steel Bars are not very active, and are quoted at 1.55c., delivered in this territory, with Rerolled Bars at 1.50c.

Coke.—The volume of business transacted has been small, and sales as a rule have been for moderate tonnages for last half of the year delivery. Prices are practically unchanged, Foundry Coke being quoted at $2.15 to $2.35, at oven, with Furnace Coke at $1.50 to $1.75, at oven. For delivery in this territory the following range of prices is named:

Connellsville Furnace Coke	$3.65 to $3.90
Foundry Coke	4.30 to 4.50
Mountain Furnace Coke	3.25 to 3.50
Foundry Coke	3.90 to 4.10

Old Material.—The material shows decided sentimental strength. Dealers are holding Scrap for higher prices, and but comparatively small tonnages could be had at to-day's quotations without advancing the price. Sales have been light during the week, small tonnages only having been moved in the leading grades. Neither Steel nor Iron mills have come into the market for any pronounced tonnages, but are picking up small odd lots from different sources at prices close to the market. Quotations, while unchanged, and largely nominal, show considerable strength, and range about as follows for deliveries in buyers' yards, eastern Pennsylvania and adjoining territory:

No. 1 Steel Scrap and Crops	$14.00 to $14.50
Low Phosphorus	18.00 to 18.50
Old Steel Axles	18.50 to 19.00
Old Iron Axles	21.00 to 21.50
Old Iron Rails	18.00 to 18.50
Old Car Wheels	13.50 to 14.00
Choice No. 1 R. R. Wrought	16.00 to 16.50
Machinery Cast	14.00 to 14.50
Railroad Malleable	12.00 to 12.50
Wrought Iron Pipe	12.50 to 13.00
New Bundled Sheets	12.00 to 12.50
No. 1 Forge Fire Scrap	11.50 to 12.00
No. 2 Light Iron	7.50 to 8.00
Wrought Turnings	10.00 to 10.50
Stove Plate	11.00 to 11.50
Cast Borings	9.00 to 9.50
Grate Bars	12.00 to 12.50

Buffalo.

BUFFALO, N. Y., July 21, 1908.

Pig Iron.—A more hopeful feeling pervades the Pig Iron market with some indications of improvement in the situation. The general impression is that better things may be looked for shortly with a gradual but steadily increasing demand. The following prices, f.o.b. Buffalo, fairly approximate the current market:

No. 1 X Foundry	$16.00 to $16.25
No. 2 X Foundry	15.50 to 15.75
No. 2 Plain	15.00 to 15.25
No. 3 Foundry	14.75 to 15.00
Malleable Bessemer	16.00 to 17.00
Gray Forge	14.75 to 15.00
Charcoal	20.00 to 20.50

Old Material.—Prices are a little stronger all along the line in the Old Material market, and a more confident feeling is developing, although the buying by consumers so far is but moderate. We quote for gross tons, f.o.b. Buffalo, as follows:

Heavy Melting Steel	$13.50 to $14.00
No. 1 Railroad Wrought	13.25 to 13.75
No. 1 Railroad and Machinery Cast Scrap	13.50 to 14.00
Old Steel Axles	15.50 to 16.25
Old Iron Axles	17.75 to 18.25
Old Car Wheels	13.25 to 14.00
Railroad Malleable	12.00 to 12.50
Boiler Plate	11.50 to 12.00
Stove Plate	12.00 to 12.25
Grate Bars	10.50 to 11.25
Pipe	10.25 to 10.50
Wrought Iron and Soft Steel Turnings	7.00 to 7.50
Clean Cast Iron Borings	6.00 to 6.50
No. 1 Busheling Scrap	11.25 to 11.75

New York.

NEW YORK, July 22, 1908.

Pig Iron.—The market has been very quiet and steady. We quote at tidewater: Northern No. 1 Foundry, $16.75 to $17; No. 2 Foundry, $16 to $16.50 and No. 2 Plain, $15.25 to $15.50. Alabama Irons are quoted $16.50 to $17 for No. 1 Foundry, and $15.75 to $16.25 for No. 2 Foundry.

Ferroalloys.—Inquiries for 80 per cent. Ferromanganese have been more numerous. The price is $44, and this will be accepted for balance of the year deliveries, but probably not for last quarter deliveries alone or those extending into 1909. For 50 per cent. Ferrosilicon $70 is quoted both by European and American producers.

Steel Rails.—The Mexican Central contract for 10,000 tons of 75-lb. Rails, referred to last week, was taken by the Pennsylvania Steel Company, and the Rails will be rolled at Sparrows Point. Some further domestic tonnage is under negotiation, but nothing has been closed in the past week.

Structural Material.—Mills are getting better specifications and the prospect for fall work is encouraging. Railroad bridge work is still of meager proportions. The Chicago & Northwestern has closed for its long pending bridge requirements, about 2200 tons going to the American Bridge Company. At Los Angeles, Cal., the Nelson-Story Building, requiring 2300 tons of Steel has been awarded to a local construction company. The Chicago, Milwaukee & St. Paul Road has placed 700 tons of bridge contracts with the Wisconsin Bridge Company. The New Haven, New York Central and Pennsylvania roads have some further bridge work in contemplation, but the tonnage is comparatively small. We quote on tidewater delivery, mill shipments, as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2c. to 2½c.

Bars.—Wage questions have been no impediment to the operation of Eastern Iron rolling mills. At each mill it has been simply a matter of getting together orders enough for a run after the midyear shutdown. Buying in Iron is mostly for the supply of early needs. The Steel Bar manufacturers, who have made contracts with consumers extending, in some cases, to July 1, 1909, are selling to dealers only for deliveries this side of October 1. In a number of instances the new contracts in Steel Bars cover simply the unspecified portions of contracts expiring July 1. We continue to quote Iron Bars at 1.35c. to 1.40c., tidewater delivery, and Steel Bars at 1.56c., tidewater.

Old Material.—The buying by dealers, who are accumulating stocks against the expected revival of consuming demand, continues, and there is also a beginning of interest on the part of users. At a price foundries and rolling mills would no doubt take on more stock, but holders are not forcing the market. Nothing comparable to the activity in Steel Scrap reported at Pittsburgh and Chicago in the past two weeks is to be found in the eastern Pennsylvania market, and the unwillingness of Open Hearth Steel works to buy except at a considerable concession from $13.50 delivered is sending some Heavy Melting Scrap from the New York District to Pittsburgh and the Shenango Valley. If this movement should become more extensive it might eventually strengthen the Eastern situation. Prices still largely represent dealers' asking prices, but it is also true that where business is done by melters it is at an advance from the level prevalent a short time ago. We quote as follows:

Old Girder and T Rails for melting	$10.50 to $11.00
Heavy Melting Steel Scrap	10.50 to 11.00
Old Steel Rails, rerolling lengths	12.00 to 12.00
Relaying Rails	21.00 to 22.00
Old Iron Rails	14.50 to 15.00
Standard Hammered Iron Car Axles	16.00 to 16.50
Old Steel Car Axles	14.50 to 15.00
No. 1 Railroad Wrought	14.00 to 14.50
Iron Track Scrap	10.00 to 10.50
No. 1 Yard Wrought, long	12.00 to 12.50
No. 1 Yard Wrought, short	11.00 to 11.50
Light Iron	5.50 to 6.00
Cast Borings	5.00 to 5.50
Wrought Turnings	6.50 to 7.00
Wrought Pipe	10.00 to 10.50
Old Car Wheels	13.75 to 14.25
No. 1 Heavy Cast, broken up	13.00 to 14.00
Stove Plate	10.50 to 11.00
Locomotive Grate Bars	11.00 to 11.50
Malleable Cast	12.50 to 13.00

Plates.—There is a somewhat better demand, and Eastern mills have increased the number of their active Open Hearth furnaces. The Troy Line boat, building at Newburgh, N. Y., on which work was suspended some months ago, is to be finished, it is now decided, and 400 tons of Plates are thus reinstated on order books. Plate manufacturers are keenly alive to the importance of the tonnage that will soon be placed for the Long Island riveted pipe line from Amityville to Clear Valley, for the extension of the Brooklyn water supply. The New York Water Board has called for bids to be in by July 31, and 400 working days are allowed for the completion of the work. We quote for wide Plates as follows at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

Cast Iron Pipe.—A shop on the Delaware has taken the contract for 1700 tons at Boston and for 2750 tons at Albany at a very close figure. Brookline, Mass., is in the market for 4200 tons. We quote 6 in. Pipe at tidewater, $23.50 to $24 per net ton.

Metal Market.

NEW YORK, July 22, 1908.

Pig Tin.—Apparently business is as dull as ever, with no improvement in sight. More or less of a shortage has developed, owing to the delay to the steamer Verona, and this will increase until the arrival of the Minneapolis, which is due July 27. Yet how much this will relieve the situation is problematic, as the boat has less than 300 tons of Tin. Arrivals since July 1 have been only 1407 tons, and including the stocks held here at that date and that aboard the Minneapolis there will be available for American consumption 3220 tons for July. As deliveries into consumption will probably reach 2500 tons, it can be readily seen that stocks at the end of the month will be very small and, perhaps, go to a new low figure. There is afloat for American ports over 2000 tons, and with the arrival of the Verona, August 10, there should be sufficient metal to go around, although no large supplies have been sent from London. It is expected that the next London steamer will bring an increased cargo. Prices during the week have been as follows:

	Cents.
July 15	29.15
July 16	29.35
July 17	29.50
July 20	29.25
July 21	29.25
July 22	29.75

The course of the London market during the week has been interesting on account of the large sales. This speculative business is probably induced by the reports that such a large number of Tin Plate mills in this country had closed. These mills have since resumed operations. The London market closes £1 higher than last week, at £134 10s. for spot and £135 10s. for futures.

Copper.—More inquiries have been in the market, with a considerable increase in the tonnage of Copper sold. Business has come from all parts of the country, and while the buying movement is larger than for many months, it is not of the same volume as formerly. This buying by American consumers comes at a particularly opportune time, because foreign buying has fallen off and exports this month will be considerably less, as for the first 21 days of the month they are only 13,000 tons. Bankers in Europe are discouraging any more imports which will have to be financed. Several sales of Lake have been made at 13c., and Electrolytic has been sold all the way from 12.85c. down to 12.75c. At least one export order has gone at 12.80c. Little has been 12.62½c. The increased buying, although a welcome sign, doing in Casting Copper, but it remains firm at 12.50c. to should not be taken too seriously, as the immense stocks held abroad will furnish a check against any sudden uprush in price. Then, too, it must be remembered that all signs point to a greater production of Copper in the United States and the world during the last half of this year than ever. Encouraging features in the line of more orders for Wire, better business in Copper Sheets and a larger demand for Scrap Metals are in evidence. The London market shows a slight advance over last week, closing at £58 7s. 6d. for spot, and £59 for futures.

Spelter.—The market is firmer and prices are higher, but no large business has been transacted. The advance comes principally from St. Louis, where prices have been raised to 4.35c. In New York quotations are unchanged, at 4.45c.

Lead.—Prices are stronger and the speculative lots which have been pressing on the market for several weeks are not going out quite as freely. Lead in New York is quoted at 4.47½c., but in St. Louis there has been an advance of 5 points, and the market there is firm at 4.32½c.

Antimony.—A slight increase in the volume of business is observed, but conditions in this trade are still unsatisfactory and prices more or less nominal. Hallett's is quoted at 8.25c. to 8.50c., Cookson's at 8.50c. to 8.75c., but outside brands are lower, at 7.75c. to 8c.

Nickel.—Prices are unchanged, at 45c. for ton lots and 55c. to 60c. for smaller quantities.

Tin Plate.—Specifications against contracts continue to come in freely, and many of the mills which were closed down for repairs have resumed. They have enough business on their books to keep them going until the middle of August at least. Prices are without change, at $3.89, New York, and $3.70, Pittsburgh, for 100-lb. I. C. Coke Plates. In Swansea, Welsh Plates are 1½d. higher, at 12s. 4½d.

Old Metals.—Considerable improvement in business is

noted. This is especially observed in the New England territory. While it is practically impossible to tell all the sales, there have been orders for 50, 20, 10 and 5 ton lots during the week. Some of these were from consumers, who believe time is ripe for an advance, and others from regular buyers, who are stocking up against actual orders. The export business to Europe has fallen off. Prices are sentimentally slightly stronger, but Old Metals can still be bought within the following range of prices, which are dealers' selling prices in New York:

	Cents.
Copper, Heavy and Crucible	12.00 to 12.25
Copper, Heavy and Wire	11.75 to 12.00
Copper, Light and Bottoms	10.75 to 11.00
Brass, Heavy	8.75 to 9.25
Brass, Light	7.00 to 7.25
Heavy Machine Composition	11.25 to 11.50
Clean Brass Turnings	7.75 to 8.25
Composition Turnings	9.00 to 9.50
Lead, Heavy	4.10
Lead, Tea	3.75
Zinc	3.50

Iron and Industrial Stocks.

NEW YORK, July 22, 1908.

Increasing activity and advancing prices have marked the stock market in the past week, both industrial and railroad stocks participating in the movement. The United States Steel shares have been remarkably active, and up to Tuesday night, July 21, the extreme advance in the common stock beyond the high point reached on Wednesday, July 15, was 2⅝, or from 42⅞ to 45½. From total sales of 500,000 to 600,000 shares last week, the market this week has shown totals around 900,000 shares, and on Monday, July 20, the record was 982,930 shares. The low and high points on active iron and industrial stocks between Thursday of last week and Tuesday of this week are indicated in the ranges given below: United States Steel common 42 to 45½, preferred 107 to 109; Car and Foundry common 37 to 39⅛, preferred 101 to 104; Locomotive common 49⅜ to 52¾, preferred 103 to 106; Steel Foundries common 7½ to 8; Bethlehem Steel common 18¾ to 21, preferred 46½ to 50; Cambria Steel 35 to 36⅞; Colorado Fuel 29½ to 33⅞; Crucible Steel common 5½ to 6, preferred 41 to 42⅛; Pressed Steel common 29⅛ to 32⅞, preferred 89 to 92½; Republic common 19¼ to 21⅜, preferred 70¼ to 74⅛; Sloss-Sheffield common 57½ to 60, preferred 97 to 99; Cast Iron Pipe common 23⅛ to 24½, preferred 68¾ to 69¾; Can common 4¾ to 5⅛, preferred 59 to 60½. The last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 45⅛, preferred 108⅛; Car & Foundry common 39, preferred 103½; Locomotive common 53⅛, preferred 105½; Steel Foundries common 45⅛; preferred 108⅛; Colorado Fuel 32¾; Pressed Steel common 32½, preferred 93; Railway Spring common 42; Republic common 21, preferred 74¼; Sloss Sheffield common 60⅞; Cast Iron Pipe common 24½, preferred 71¾; Can common 5½, preferred 60¼.

The Hazelton Sheet Steel Company.

The Hazelton Sheet Steel Company, Hazelton, Pa., started up its new sheet steel mill July 7, and now has three hot mills in successful operation and expects to start the fourth mill this week. The plant was built under the direction of L. C. Taylor, formerly of Cambridge, Ohio, organizer of the company. It is located on a 12-acre tract on the Lehigh Valley Railroad, and cost about $250,000. The rolling mill building, 110 x 260 ft., contains 4 hot mills, 2 cold mills, 4 sheet furnaces, 4 pair furnaces, 4 annealing furnaces, 2 steam doublers, a 25-ton traveling crane, 1200 hp. Corliss horizontal engine, and other necessary equipment. There are also the roofing and galvanizing department, 62 x 240 ft.; a power plant equipped with a 150-hp. automatic engine and generator, 4 boilers aggregating 700 hp., and 2 Duff patent gas producers. The plant has an annual capacity of 16,000 tons of black and galvanized iron and steel sheets, blue annealed and electric sheets, steel roofing and corrugated sheets, conductor pipe, eave trough, &c. The main office will be located at 318 Stephen Girard Building, Philadelphia, Pa., where Mr. Taylor will make his headquarters after August 1. The officers of the company are the following: President, E. Cooper Shapley; vice-president, M. F. Straus, president of the American Tin & Terne Plate Company, Philadelphia; general manager, Larkin C. Taylor, formerly with the United Sheet & Tin Plate Company, Marietta, Ohio; sales manager, John N. Rensen, formerly with the Follansbee Brothers Company, Pittsburgh; superintendent, W. A. Housholder, formerly manager of the American Sheet & Tin Plate Company, at Chester, W. Va.; assistant superintendent, Ira Housholder, formerly assistant superintendent of the American Sheet & Tin Plate Company, at Chester, W. Va.; superintendent of galvanizing and roofing departments, H. T. Wilson, formerly superintendent of the galvanizing department of the American Rolling Mill Company, at Middletown, Ohio.

Cincinnati Metal Trades Outing.

Saturday, July 25, will be a red letter day for several thousand employees of the Cincinnati machinery manufacturers who are members of the Cincinnati branch of the National Metal Trades Association. The third annual outing will be given as usual at Chester Park. Tickets will be given out to all employees, no distinction being made between those who have been laid off and those now on the payroll. Entries for the athletic and aquatic events have been more numerous than formerly. Superintendent M. C. Langnecker of the Cincinnati Gymnasium and 16 assistants will have charge of the events, for which medals of all kinds and a purse have been provided. Everything on the grounds will be free to each employee and his family, each ticket being good for $1.40 worth of amusement, and admitting to all forms of entertainment. E. H. Haargrave of the Cincinnati Tool Company is chairman of the committee in charge, on which are also P. O. Geier of the Cincinnati Milling Machine Company, S. C. Schauer of the Cincinnati Machine Tool Company, Robert McGowan of the John H. McGowan Pump Company, E. Von Wyck of the Von Wyck Machine Tool Company, and Secretary John Manley of the Cincinnati Association. Dinner will be served at the clubhouse at 6.30. Provision will be made at this dinner for all members of the association and superintendents and foremen of the various establishments.

Worth Brothers Company to Build a Blast Furnace.—Worth Brothers Company, manufacturers of steel plates, Coatesville, Pa., will begin at once the erection of a blast furnace. It will be about 85 ft. high and will have a daily capacity of 400 to 450 tons of basic pig iron. The construction will be under the direction of the company's own engineering staff. The new furnace will be in close proximity to the open hearth steel plant now operated by Worth Brothers Company and it is expected to charge hot metal from the blast furnace to the open hearth furnaces. The company expects to begin placing contracts soon for materials, machinery and all necessary equipment. An ore bridge will be built and the construction and equipment of the entire plant will be thoroughly modern. The open hearth plant at Coatesville was built in 1895 and 1896 and consists of 10 50-ton and 6 35-ton furnaces. The company's rated capacity is 285,000 tons of basic ingots and 15,000 tons of acid ingots per year.

The Hudson-Fulton Celebration Commission, New York City, is planning for the commemoration next year of the discovery of the Hudson River by Hendrik Hudson in 1609, and the first successful trip of Robert Fulton's steamboat Clermont on the Hudson in 1807. The celebration will begin September 25, 1909, and continue through Saturday, October 2. A feature will be two naval parades, one starting from Albany and the other from New York, meeting at Newburgh. An appropriation of $300,000 by the New York Legislature is expected.

Two new fireboats of New York City are equipped with Worthington centrifugal pumps driven by Curtis steam turbines. They are 12-in. two-stage pumps, designed to deliver 4500 gal. per minute, each against a pressure of 150 lb. The turbines are rated at 650 hp. each, with steam pressure of 220 lb. and vacuum of 26 in., and running at 1800 rev. per min. A flexible coupling directly connects the rotating parts. In a test by the General Electric Company such a turbine delivered 1 hp. per 15 lb. of steam consumed.

OBITUARY.

CARL LUNKENHEIMER, first vice-president of the Lunkenheimer Company, Cincinnati, died at Pasadena, Cal., Sunday, July 19. He had been in ill health for several years, and had resided for the most part in California. The funeral will be held in Cincinnati.

ANICETO GARCIA MENOCAL, long prominent in hydraulic engineering, died in New York July 20, aged 69 years. The son of a Cuban planter, he came to the United States in 1857 and in 1862 graduated at Rensselaer Polytechnic Institute, Troy, N. Y. He became chief engineer of the Havana Water Works and his work attracted attention. He became connected with the New York Department of Public Works in 1870 and in 1872 was made chief engineer in the Navy Department, conducting government surveys for a ship canal at Panama and Nicaragua. He was sent to Paris in 1879 by President Hayes as a delegate to the Canal Congress and was decorated with the Order of the Legion of Honor. In recent years he has served on important government commissions in the Philippines, Liberia and Cuba.

ANNOUNCEMENT is made by the Upson Nut Company, Cleveland, Ohio, of the death of Oliver A. Austin, on Friday, July 17, aged 58 years.

FRANCIS ALLEN BARROWS, Salem, Mass., for many years a manufacturer of farming implements, is dead at the age of 83 years. He was a native of Castleton, Vt., where he learned the iron workers' trade, and afterwards built up an important manufacturing industry in the town. In 1876 he invented a swivel plow which yielded him large returns. He leaves two daughters.

Two Important Wage Scale Settlements.

With the signing of the iron wage scale last week by the Republic Iron & Steel Company and the Youngstown Sheet & Tube Company all scale matters of the Amalgamated Association are settled for the year. The sheet and tin plate scales were arranged with the American Sheet & Tin Plate Company at Pittsburgh June 29, the independents afterward signing these scales. An iron scale was arranged with the Western Bar Iron Association at Detroit July 11, the substance of which was given in *The Iron Age* last week. The Youngstown Sheet & Tube Company, which operates sheet mills and puddling furnaces, &c., but as totally distinct departments, signed the entire scale last week. It had desired to sign the sheet scale immediately after it was agreed to between the American Sheet & Tin Plate Company and the Amalgamated Association, and start its sheet mills, but the Amalgamated Association would not allow it to sign this scale alone, requiring that it should sign the entire scale, although the iron scale had not yet been arranged in a way satisfactory to any of the manufacturers. When the iron wage scale was actually arranged the Youngstown Sheet & Tube Company signed the entire scale, and this week started its sheet and iron departments.

The Republic Iron & Steel Company signed the Detroit iron scale last Friday. This removed the last of the scale uncertainties, as originally the company had demanded quite a large reduction in the iron scale, and there was a possibility of a conflict. The Republic Iron & Steel Company started its Bessemer steel plant at Youngstown Sunday night, it having been idle since the last week in June, and this week it is starting most of its rolling mills. The entire Brown-Bonnell plant, the most important of the company's rolling mills, was put in full operation Monday morning, and the Mahoning Valley plant, with the exception of a few departments, was put in operation Tuesday night. A number of the Western plants are also being started.

The usual bimonthly return was made last Saturday, and showed that the average realized price on base sizes of iron bars during May and June lay between 1.35 and 1.40 cents, or 1-10 cent. less than in the preceding period. This makes the puddling rate for July and August, $5.37½, against the rate of $6.12½, which prevailed during May and June, 25 cents of the decline being due to the lower price of bar iron, and 50 cents to the lower wage rates in the scale.

Milliken Receivers on the Structural Situation.

The recent order of the courts continuing the receivership of Milliken Bros., Inc., to August 1, 1908, was made after the filing of a report covering operations from June 11, 1907, to June 24, 1908, accompanied by the statement that reorganization plans were being worked out. The tonnage fabricated in the period named was 33,800 tons, against 34,670 tons in a like period in the preceding year, when, in addition, 3464 tons was fabricated for the building of the company's new steel plant. In the months of April, May and June, 1908, there was fabricated at the bridge plant 6000 tons. For the same period last year 10,721 tons was shipped. Following are the receipts and expenditures for the period named:

RECEIPTS.

Cash on hand at New York as per statement Haskins & Sells	$64,439
Cash on hand June 10, 1907	6,218
Received on account of contracts	2,646,291
Received on account of estate accounts receiver	147,027
Realization of inventories June 10, 1907	247,519
Proceeds of receivers' note for $90,000, Carnegie Trust Company	89,979
Received from all other sources	27,121
Total	$3,228,594

DISBURSEMENTS.

Expenditures on contract	$2,063,005	
Interest on bonds	180,000	
Payment of note (Carnegie Trust Company)	90,000	
Preservation of steel mill	41,299	
Payment of claims preferred by statutes	58,727	
Miscellaneous disbursements	21,569	
General administrative expenses	242,021	
		2,696,621
Balance on hand June 24, 1908		$531,973

The demoralization in the structural market in recent months is emphasized in the receivers' report, and inferentially the chance for profitable operation of the plant in times of normal activity and good prices. We quote the following:

During the past three months there has existed in this community an unprecedented condition in the structural steel business; at no time in the entire history of this business has the condition been worse. The tonnage which has been let has been remarkably light even for a period of depression. All fabricating concerns, without exception, have reduced the tonnage in their shops to such an extent that in most cases it became necessary for them to take work at any price in order to keep the shops running. The result has been that not only has there been a small amount of work let, but the prices at which this work has been taken have been amazingly low.

We take great pleasure in reporting that notwithstanding this condition and notwithstanding the difficulties of operating a going concern under a receivership, we have been able, without taking work at especially low figures, to keep the shops going with a fair output. We are able to report that at the present time there is enough work to keep the shops operating at the present rate for at least a period of two months. However, we have not found it possible to get sufficient business to carry the entire overhead expense. During this period of worldwide business stagnation, in which the steel industry is particularly affected, we have maintained unimpaired the value of the goodwill of Milliken Brothers, Inc., and have continued the business of this company, without interruption, under circumstances unpredecentedly adverse, have vigorously and successfully competed in the markets at home and abroad, and have secured profitable contracts not only in the United States, from the Atlantic to the Pacific Coast, but also in Mexico, Argentine Republic, Cuba, Brazil, Peru, Venezuela, United States of Colombia, Porto Rico and the Hawaiian Islands. Thus we have been enabled to avail of and maintain the valuable organization of the company and to keep the shop comfortably filled with work, considering the depressed condition obtaining in the steel business. At the same time we have extended the scope of business and increased the efficiency of the plant, while decreasing its operating expenses.

A party of about 50 members of the Engineers' Society of Western Pennsylvania and others visited the plant of the United States Sanitary Mfg. Company, Colona, Pa., July 21, and saw all the operations involved in the manufacture of sinks, lavatories, bathtubs and other enameled goods. The foundry, pattern shop, grinding and sand blast departments were all visited, but special interest was taken in the enameling department, which is equipped with special appliances of modern type.

The Machinery Trade.

NEW YORK, July 22, 1908.

There were no new developments of magnitude in the trade the past week that will result in important purchases of machinery at an early date, and so far as could be learned no large inquiries were sent out nor were there any good sized orders received. As a consequence of the inactivity on the part of the larger interests, including the railroads which are only doing a little scattering buying, there was no increase in the demand for machine tools, which is very light. An optimistic feeling as to the fall trade still prevails, and it is hoped that these expectations will be realized. The several large projects before the trade have not yet materialized into actual business. It is expected, however, that within the next few days the $50,000 list of machine tools will be sent out by the International Steam Pump Company, and those who are closely following the contractors for the construction of the Delaware, Lackawanna & Western cut-off state that inquiries for contractors' equipment will shortly be issued. In the West a project that will necessitate the purchase of considerable mechanical equipment is the proposed new plant of the McKeen Motor Car Company, Omaha, Neb., which is affiliated with the Union Pacific Railroad.

Ardeshir D. Wadia and P. S. Mehenti, of the firm of Ardeshir D. Wadia & Co. of Ahmedabad and Bombay, India, who are dealers in all sorts of machinery and mill supplies and make a specialty of cotton mill equipment, left last week on the Lusitania for England, after spending 10 days in this country making American connections, and while here they spent several thousand dollars for machinery equipment. The territory their agency covers is known as the Presidency of Bombay, and it is larger than the whole State of Texas. While in New York the visitors were guests of Charles A. Schieren, Jr., of the Charles A. Schieren Company, which they represent in India. They are making an eight months' tour of the world, with a view to establishing added business connections and getting acquainted with the machinery trade in general. They expressed their regret that they did not realize the importance of the machinery interests of this country and wished they had set aside more time to spend here, they having allowed themselves only 10 days for their American visits.

Their first calls were in the West, and they spent some time in Cincinnati, where they arranged agencies with the Cincinnati Milling Machine Company, Cincinnati Machine Tool Company and Lodge & Shipley Machine Tool Company. They also arranged agencies with the Standard Tool Company of Cleveland, and Hart Mfg. Company, electrical supplies, of Hartford, Conn. They placed orders for machinery equipment with all these firms, and made some arrangements for exhibits at an exposition to be held at Nagpur, India, early next year. This exhibition will draw from all the central provinces of India, and machinery shown will be electrically driven, but not by individual motors. The shafting in the exposition hall will be operated by electricity and belt drives will be used on the individual machines. The Charles A. Schieren Company will exhibit its well-known Duxbak display shown at the Jamestown Exhibition. In the American transactions of Ardeshir D. Wadia & Co. the Charles A. Schieren Company, through Charles A. Schieren, Jr., will act as a confidential and financial agent. The visitors announced that all machinery engaged for the exposition, in case the machinery is not sold, the India firm will purchase within 12 months from the day of shipment. Before leaving the visitors said that industries of India were increasing rapidly, especially in the central provinces, and American equipment is finding great favor there.

President Charles F. Aaron of the American Supply and Machinery Manufacturers' Association, who was elected at the recent convention of the organization at Richmond, Va., has appointed the following standing committees for 1908-1909:

Conference and Grievance Committee.—Samuel L. Moyer, chairman, Lunkenheimer Company, Cincinnati, Ohio; N. A. Gladding, E. C. Atkins & Co., Inc., Indianapolis, Ind.; E. C. Hinman, American Steam Pump Company, Battle Creek, Mich.; H. B. Lupton, Oliver Iron & Steel Company, Pittsburgh, Pa.; M. W. Mix, Dodge Mfg. Company, Mishawaka, Ind. Membership Committee.—W. S. Paden, chairman, Northampton Emery Wheel Company, Chicago, Ill.; J. E. Kelley, Simonds Mfg. Company, Fitchburg, Mass.; Chas. P. King, American Iron & Steel Mfg. Company, Atlanta, Ga.; D. K. Swartout, Ohio Blower Company, Cleveland, Ohio; J. H. P. Wharton, La Belle Iron Works, Steubenville, Ohio. Credentials Committee.—F. A. Hall, chairman, Yale & Towne Mfg. Company, New York; H. J. Grover, Brown & Sharpe Mfg. Company, Providence, R. I.; Willard Parker, Pennsylvania Shafting Company, Spring City, Pa. Press and Publicity Committee.—H. J. Grover, chairman, Brown & Sharpe Mfg. Company, Providence, R. I.; J. E. Osgood, J. M. Carpenter Tap & Die Company, Pawtucket, R. I.; G. L. Gillon, Watson-Stillman Company, New York. Resolutions Committee.—John Trix, chairman, American Injector Company, Detroit, Mich.; John W. Neil, John H. McGowan Company, Cincinnati, Ohio; Edmund F. Smith, Baeder, Adamson & Co., Chicago, Ill.; Joseph W. Wall, Gardner Governor Company, Quincy, Ill.; Chas. O. Wood, T. B. Wood's Sons Company, Chambersburg, Pa. Committee on Rules and Order.—A. D. Hermance, chairman, Hermance Machine Company, Williamsport, Pa.; F. A. Ball, L. S. Starrett Company, Athol, Mass.; F. F. Chandler, Chandler & Taylor Company, Indianapolis, Ind. Convention and Entertainment Committee.—T. H. Dickerson, chairman, New York Belting & Packing Company, New York; D. J. Campbell, Dodge Mfg. Company, Mishawaka, Ind.; Clement Restein, Clement Restein Company, Philadelphia, Pa.

There are some inquiries in the market for machinery required for the J. Wiss & Sons Company, Newark, N. J., manufacturer of shears, tinners' snips, cutlery, &c., for machinery. The requirements consist principally of drop hammers, presses and the like. It is understood that this is not for any great extension, but to meet the growing needs of the present plant.

The Galard Company, 31 Union square West, New York, recently incorporated, contemplates increasing its manufacturing facilities and is negotiating for a large manufacturing building in the vicinity of New York, for the equipment of which it will be in the market for machinery and fittings. The company manufactures bathroom fixtures, medicine cabinets, &c.

Equipment will probably soon be purchased for the power plant and repair shops for the Southern Cambria Railroad, which is being constructed to connect Johnstown, Conemaugh, Mineral Point, South Fork, Ehrenfeld, Summerhill and Ebensburg, Pa., comprising about 24 miles of track. The power station and repair shops will be located at Mineral Point. Material is being delivered for the construction of the power house and barn, but contracts for the equipment have not yet been made. Concerning equipment, inquiries should be made of James Bryan or Charles Tennis, care of Tennis Brothers, Fourth avenue, Pittsburgh, Pa. The officers are: George M. Wertz, Johnstown, president; P. J. Little, Ebensburg, secretary; G. Walters, Johnstown, treasurer; James Bryan, Pittsburgh, electrical engineer, and William Butler, Johnstown, chief engineer.

The Public Service Corporation of New Jersey, which has been buying considerable equipment in the New York market of late for its Marion power house and which has arranged to erect a terminal at Hoboken, has also announced that plans are being prepared to construct a large and costly terminal at Exchange place, Jersey City. The construction of this terminal will include some tunneling in order to connect with the McAdoo tubes at that point, and the building will also be connected with the Pennsylvania Railroad ferries, so that passengers of Jersey City may reach the Public Service Corporation's trolley cars without going from shelter. As far as can be learned, plans have been made only in a general way and none of the equipment has been purchased as yet. Another New Jersey corporation that will come into the market for machinery equipment shortly, either directly or through contractors, is the Prudential Insurance Company, which is preparing plans for a large addition to its building at Newark, which is already the largest office structure in the State.

Within the next few months specifications will probably be ready for the mechanical equipment required for the hydro-electrical plant to be developed by the Knoxville Power Company, National Bank Building, Washington, D. C., on the Little Tennessee River, at a cost of about $2,000,000. About 32,000 hp. will be developed, and the requirements will include five 9000-hp. turbine units, two exciter turbine units of 400 hp. each, direct connected to 250-kw. direct current generators; five 5000-kw. generators, direct connected to the turbines; a 30-ton electric traveling crane and other machinery. Pressy & Weller, Hibbs Building, Washington, are engineers in charge of the work. None of the machinery has been purchased.

The New York Central & Hudson River Railroad has sent out of late inquiries for power equipment to generate about 600 kw., for use in the New York City territory.

The Board of Trustees of Pensacola, Fla., will receive bids until July 30 for one air compressor and receiver, the compressor to be capable of compressing sufficient air to lift 2,000,000 gal. of water from 13 driven wells.

Business Changes.

J. W. Lowell, who is Eastern manager of the Fort Wayne Foundry & Machine Company, has also been appointed manager of the Bass Foundry & Machine Company and has taken more commodious offices in the American Surety Building, 100 Broadway, New York. J. H. Bass of Fort Wayne, Ind., is president of both companies. With the management of the Eastern business of both companies, Mr. Lowell is in a position to handle contracts for steam engines and boilers or gas engines and gas producers. The

New York office of the Bass Foundry & Machine Company was located prior to May 1 at 141 Broadway.

The American Stoker Company, Pittsburgh, Pa., has moved its general offices to the Park Building. The company in reorganizing its machine department appointed as its chief engineer John Van Brunt, who has had considerable experience in the stoker business, and having made advantageous arrangements with the Coshocton Iron Company is prepared to fill all orders promptly for stokers and stoker repair parts, both chain grate and American underfeed.

Fred F. Fischer and P. F. Hegerty, having offices at 310 House Building, Pittsburgh, have been appointed sales agents for the Pennsylvania Boiler Works, Erie, Pa., for its tubular and locomotive type of boilers, and the Nagle Engine Company of Erie for its line of heavy duty and tandem compound Corliss engines.

Chicago Machinery Market.

CHICAGO, ILL., July 21, 1908.

The amount of actual business developed last week in machinery lines added very little to the forward momentum of the market. Beyond question some of the present lethargy of trade is attributable to the usual dullness of the season. Perhaps, too, there is less energy expended by sales departments in their effort to secure orders and this may have something to do with it. That such is the case may naturally be inferred from the numerous gaps noticed in the ranks of officers, managers and employees caused by vacation absentees. Owing to the prevailing quietness in business these are perhaps not only more numerous but the vacation terms are not unfrequently more prolonged than usual. But whatever causes or combination of causes operating in restraint of trade they are at least effective in restricting transactions to extremely modest proportions. Reports of an encouraging nature come from a few large shops making varied lines of machinery, especially in power and generative equipment. The Allis-Chalmers Company, for instance, reports a very decided gain in orders entered in June over the preceding month, with a promising showing thus far in July. Several contracts for equipments of important size taken in this period have helped to produce this result, and it is doubtful if it could be pointed to as an evidence of widespread improvement in demand. Mining enterprises, particularly in the West and Northwest, have not felt the effects of business depression to the same extent as many other industries, and some good-sized orders for machinery required in mining and smelting operations have been recently entered. Nothing more than straggling inquiries for single machines are coming in to engage the attention of machine tool dealers. The market is entirely bare of any inquiries embracing tool lists of considerable size and railroads are practically out of it; they are buying nothing in the way of tools that they can possibly get along without. While the tool trade will doubtless feel in a measure the reflex action of general improvement when it begins to appear in a decided manner, yet it will not rise with the tide at once. For this reason both manufacturers and dealers are trimming their sails for a moderate breeze through the remainder of the year.

A prospective improvement of the United States Steel Corporation is involved in a recent purchase of several hundred acres of stone quarry land near Stinesville, Ind. This property will be developed with a view to supplying the company's furnaces in the Chicago District with lime stone and the installation of extensive machinery equipment will be required for getting out and preparing the product for shipment. Plans for plant buildings, trackage system and other necessary construction are being prepared, and the company will come into the market for a large amount of machinery, including crushers, derricks, motors and other auxilliary apparatus. It has, however, been incorrectly stated in a number of the newspaper dispatches that purchases of this equipment are now being made. Just how soon this point will be reached in the development of plans has not been determined.

A new plant of notable size and design has been planned by the Ford Motor Company, Detroit, Mich. A tract of 60 acres has been secured, in the northern outskirts of the city, which includes a mile track for testing, and upon this site will be erected a four-story building of reinforced concrete and glass, 75 x 865 ft. Besides this main building there will be a separate office in front and a power house at one side. The roof of the building will be of saw tooth construction, and aside from the supporting frame work the walls will be principally of glass. The extent of glass area in the building is indicated by the fact that windows provided will require 52,435 sq. ft. of glass. The equipment of the plant will include machinery for making every part that enters into the construction of an automobile from screws to upholstering.

The Kansas City, Ozark & Southern Railway incorporated with a capital stock of $300,000 to construct and operate a standard gauge electric railroad about 15 miles in length is one of few Western enterprises of this character now requiring new machinery equipment. Beginning at Mansfield, Mo., a junction point on the St. Louis & San Francisco Railroad, the projected road extends to Ava, Mo., the county seat of Douglas County, and travels a territory comprising 1300 to 1500 square miles that is now without railroad facilities. The work of grading is being pushed rapidly forward, and the laying of steel, it is stated, will soon be commenced. An available water power of several thousand horsepower capacity will be utilized for the generation of electric current, and in addition thereto the company will install an auxiliary steam plant. Some orders for machinery have already been placed, but included in the equipment yet to be purchased are boilers, engines, pumps, turbine wheels and electric machinery and equipment. The officers of the company are, Albert C. Parker, president; J. S. McIntosh, vice-president and treasurer; Geo. W. Wilhelm, secretary, all of Kansas City, Mo.; J. B. Quigley, chief engineer and general manager, Sedalia, Mo. The general offices of the road are located at Ava, Mo., but all communications addressed to the company should be sent to Mansfield, Mo.

Brundin Bros., Albert Lea, Minn., contemplate improvements to their meat packing plant which will include the early installation of refrigerating machinery. The firm is now in the market for a 25-ton refrigerating machine on which it would be pleased to have prices from manufacturers of such equipment.

Pending investigation regarding the question of location the Commissioner of Public Works, Tacoma, Wash., has withdrawn the advertisement for bids for the installation of a new water power plant. It is expected that the matter will be taken up again a little later on.

Having secured a 20 years' franchise for operation of an electric light plant, B. C. Morrison, Olathe, Kan., has organized a company with a capital stock of $30,000, which will take over the present plant. The improvements contemplated will involve the purchase of new Corliss engines and alternating current generators.

To meet the needs of service in its electrical plant the Mayfield Water & Light Company, Mayfield, Ky, has purchased a 300 kw. direct connected alternator, and will later on buy a similar unit of 500 kw. capacity.

Cleveland Machinery Market.

CLEVELAND, OHIO, July 21, 1908.

The local machine tool market continues very quiet. Dealers report no improvement in the demand for the standard tools, sales being limited to single tools in the smaller sizes. The demand for some lines of special machinery has improved somewhat, and dealers in automatic machinery report a better demand for that line. During the period of depression many manufacturers have taken up the problem of reducing the cost of production, and in refitting their plants with that object in view are placing orders for new special and automatic machinery. The throwing out of some old machine tools and the putting in of new and more up to date equipment results in the placing of some orders for single tools, but there is practically no demand for machinery for enlargements of industrial plants. Some concerns that have extensions under consideration are waiting until general business conditions become more favorable. During the spring there was a fair demand for small machine tools for small plants of various kinds that were being started up, but at present practically no new projects requiring machine tools are being launched, so that the demand from this source has about disappeared.

There seems to be more activity among automobile builders than among any other line of manufacturers in the matter of refitting and enlarging plants, and the demand for machine tools from this source is fairly good. Dealers expect some buying by the automobile people during the next three or four months. With a large number of the builders the automobile industry is in a very satisfactory condition, and the makers are looking for a very good year in 1909.

While machine tool dealers are not looking for much of an improvement in orders before September, and some of them do not expect conditions to reach their normal state before next year, a more optimistic feeling prevails among makers of tools and machinery, who report the outlook better. There is an improvement in inquiries for heavy machinery, and some good sized orders for coal handling and other machinery equipment are pending. Very few inquiries are as yet being received from railroads, but with the large amount of repair work that must be done before freight traffic resumes its normal proportions machinery makers are looking for a decided improvement in the demand from the railroads early in the fall. There is some improvement in orders and inquiries for cranes. The same is true of industrial cars.

The second-hand machine tool market is very quiet.

Very few are being offered the dealers and the demand does not exceed the supply.

The jobbing foundries continue to improve very slowly. Small steel castings plants report no improvement in their orders.

The American Shipbuilding Company has decided to build a large boiler shop in connection with its Lorain plant. The directors of the company have made a large appropriation for the purpose and the new shop will be one of the largest on the lakes. The company has been making the boilers for boats built at Lorain at its Cleveland shops and one of the latter may be dismantled. Later a new machine shop may be added to the Lorain plant. No orders have as yet been booked by the company for boats for next season's delivery and the outlook is not very bright, considering the present condition of the lake trade.

The Williams Foundry & Machine Company, Akron, Ohio, has been incorporated in Ohio, with a capital stock of $75,000. The company formerly operated under a West Virginia charter, with a capitalization of $50,000. The increase in stock is due to the purchase recently of the Akron Clutch Company, which was merged with the Williams Company's plant. It is planned to increase the working force 25 per cent. The incorporators are J. K. Williams, C. Franz, J. E. Bennett, Harvey Musser and T. W. Kimber.

The Ohio Bale Tie Company, of which M. D. Kilmer is manager, has moved its office from the American Trust Building to a factory building on the Cleveland & Pittsburgh Railroad, near Euclid avenue, where the company has secured 6000 sq. ft. of floor space for the manufacture of bale ties and other products that will be added to its present line. Machinery equipment is now being installed. The company recently took out incorporation papers, with a capitalization of $50,000. The incorporators are H. R. Crow, H. R. Brailey, M. D. Kilmer, H. Miner and C. M. Lemmon.

A change has been made in the organization of the Modern Machinery & Engineering Company, machinery dealer, 309 Schofield Building, Cleveland. At the recent annual meeting of the directors T. F. Ahern was elected president and treasurer; Robert M. Bronson, vice-president, and James M. Hibbard, secretary. Mr. Hibbard, who resides in Detroit, is a new stockholder. The company reports the sale recently of six Potter & Johnston automatic machines to the Weston-Mott Company, automobile maker, Flint, Mich.; five to the Wayne Automobile Company, Detroit, Mich., and two to the International Harvester Company.

The Cady Machine Company, Cleveland, has recently placed on the market a new chain making machine, for which it is receiving a very satisfactory number of orders. The company also reports an improvement in its inquiries for presses.

The McMyler Mfg. Company, Cleveland, reports considerable improvement in the business outlook. The company has taken four crane orders during the past two weeks, and has a number of inquiries pending.

The Wile gas producer, heretofore furnished by the Wile Power Gas Company, is now exclusively manufactured and sold by the Gas Machinery Company, Cleveland, Ohio. J. J. Wile has been appointed sales manager of the Wile producer department.

Cincinnati Machinery Market.

CINCINNATI, OHIO, July 21, 1908.

Carefully reviewing the local field, it appears to be the standard tool—the more expensive and elaborate piece of machinery—that has had the call since the beginning of the second half of the year. Milling machines, shapers and planers are to be credited with the greatest activity; and while manufacturers in these lines have noticed an appreciable increase in inquiry and have made some (for the times) exceptionally good sales, they are quite uncertain whether it is the beginning of a buying movement that will be permanent. One or two similar periods since the beginning of the year are recalled, which as events showed belonged to the spasmodic class. One of the largest firms in this field manufacturing millers has had some good business in the past 10 days or two weeks. Lathes have become more active also since the beginning of July. One manufacturer reports the sale of a couple of 42-in. lathes and has been apprised of appropriations that should result in the sale of several more. Having booked something like 40 orders, on which it is now working, the company takes an optimistic view of the future. Drills, drill presses and punching and shearing machinery are not so active, and some establishments manufacturing drills, having a good sized stock of machines on the sales floor, have shut down for a brief time. There is a little better inquiry for planers and shapers, and some large and expensive types of these machines have been shipped since the first of the month. One company shipped a carload of shapers for export early in July and has had some very fair inquiries this month. Another manufacturer of shapers has made some good sales for domestic shipment.

Illustrating the shifting and uncertain character of tool orders, some recent sales include one through a Baltimore dealer for a 14-in. motor driven shaper for installation in the revenue cutter Seneca, and another for the shipment of a 24-in. triple back gear to Vera Cruz and a 16-in. single gear to go to Torreon, Mexico. Some sales have been made in the week also of tools for technical and trade schools in different parts of the country. These branch schools are multiplying and the interest is growing rapidly. The dealers report having better inquiry for the standard tools and a little diminution of the interest evidenced in special machinery a month ago. Collections are reported better throughout this section.

Among the jobbing foundries there is a general cleaning up process and preparations for the expected activity later. For the present it cannot be said that the situation is any better save with those making miscellaneous castings. Local foundries depending largely on the machine tool companies do not look for much better times before the election. As a rule the larger tool establishments have enough machines on the stock floor to take care of intermittent calls and will not order castings until they are compelled to do so.

It is reported that the foundry of the National Steel Casting Company at Montpelier, Ind., is closed down temporarily.

The plant of the Bucyrus Steel Casting Company, Bucyrus, Ohio, is in operation again after a short shutdown and prospects are reported good for a gradually increasing melt.

A new car wheel is being tried out on the Toledo, Port Clinton & Lakeside Railroad, the experimental set of four wheels having been made by the C. E. Sutton Company of Toledo. The wheels are in sections of five pieces—the body, the tire, the disk, the flange and the collar. After being assembled the wheels are said to possess the strength of the solid piece, with the advantage that a worn out flange may be substituted and the wheel be quite as serviceable as before, whereas in the ordinary wheel the entire piece is practically worthless with a broken flange.

The United States Malleable Iron Company is a new corporation for Toledo, Ohio, with a capital of $60,000. Robert C. Pew and associates are given as incorporators.

The Buckeye Steel Castings Company at Columbus, Ohio, announces a quarterly dividend of 1 per cent. on the common and 1½ per cent. on the preferred stock, payable August 1. The additions at the plant are now practically completed and preparations are being made for the expected increase of business.

Resumption of work in all departments of the Lima Locomotive & Machine Company at Lima, Ohio, is noted, after a practical shutdown for several months.

The Shortsville, N. Y., branch of the American Seeding Machine Company will be merged with the Hoosier drill plant at Richmond, Ind., some time in the fall. Everything is expected to be ready by November 1, when the fiscal year begins for the Richmond company. The Shortsville concern will bring its own office force and several of its foremen. Under the consolidation the Richmond plant will employ about 500 men.

The United States Cast Iron Pipe & Foundry Company will furnish the pipe for the water works extension in the city of Springfield, Ohio. The estimate of the successful bidder was $11,405.70, which buys 189 tons of 6-in., 263 tons of 12-in. and 70 tons of 16-in. pipe.

It is expected that the additions now being constructed at the plant of the American Steel Wheel Company in Alexandria, Ind., will be completed and the enlarged plant in operation the latter part of August. The capacity will be doubled.

A business association of Evansville, Ind., is working to secure a new machinery foundry which it is said is anxious to locate in that vicinity.

New England Machinery Market.

WORCESTER, MASS., July 21, 1908.

It cannot be said that the trade notes any improvement in actual demand for machine tools. The week has seen a number of sales, several of some amount by comparison with the usual single tool order. Inquiries are no less active than for the past month. The trade has heard of improvements in other lines of business in which machine tools are an important factor in manufacturing, and it is argued from this change, slight though it is up to the present time, that if improvement can come in the very middle of the hot weather, the return of cooler days should see the betterment strongly accentuated.

The machine tool builders find business as dull as ever. Curtailment is the rule everywhere. Where the shops are not shut down completely, they are usually on reduced time

with small working forces. Inquiries continue, strongly tinged with promise of actual sales, as has been the case for months, but there is still the tendency of customers to hold off. Some of this business is being placed, however. The General Electric Company has bought a few tools for the Lynn and Pittsfield works, and a few sales of a like nature are recorded, though the fortunate recipients of orders speak the names of such customers in whispers only, for there is no desire to inform competitors of what is happening in the way of actual business.

The report of the Chandler Planer Company, Ayer, Mass, is somewhat typical in a general way. The works have been shut down for some time, but it is believed that inquiries which amount almost to orders will result in contracts in the near future, totaling a business that will make necessary the starting up on full production. Work on orders already in hand has not begun, because customers are in no hurry for the tools.

While many of the daily newspaper reports of improved business conditions among the manufacturers are exaggerated, it is nevertheless evident that some New England industries are experiencing changes for the better. The shoe manufacturers are busy, and many of the cotton mills are on full time, with practically full working forces. In the metal industry, outside of machine tools, an increase in volume of orders is noted, generally not strongly marked, but when it is taken into account that the change comes in the season when improvement is least to be expected the gain is the more important. Inquiry of a number of prominent manufacturers of Connecticut revealed an increasing sense of a strengthening of their market. Not all of them have received an actual increase in orders, but without exception they express the belief that the situation is a hopeful one, and that the autumn will see a more marked improvement. A few of the statements follow:

E. J. Manville Machine Company, Waterbury, Conn., builder of heavy machinery, screw thread rolling machines, automatic screw slotters, wire forming machines, power presses, &c.: "Business with us is constantly growing better and we look for a good fall trade. We are running 51 hr. a week, which is the customary summer schedule."

Peck, Stow & Wilcox Company, Southington, Conn., hardware specialties, wrenches, tinsmiths' tools and machinery: "We note a slightly encouraging tone in orders."

Waterville Cutlery Company, Waterville, Conn.: The shear department opened after summer vacation on practically full time and with force of hands increased to about the normal of a year ago.

Wm. L. Gilbert Clock Company, Winsted, Conn.: Resumed on 50 hr. a week schedule, with business prospects much better than they were, though not all that could be wished.

Wm. Schollhorn Company, New Haven, Conn., hardware specialties: Business has been resumed with full force on full time, because of increased business.

Bristol Brass Company, Bristol, Conn.: Improvement is noted in business, but it is a slow one.

Russell & Erwin Mfg. Company, New Britain, Conn., builders' hardware: "Beginning with February 1 our monthly sales have not varied by $5000 from month to month, and our business has maintained a very constant volume. In the past fortnight, however, there has been a sharp upturn in the quantity of orders received. While we are by no means confident that this is anything but a temporary spurt, still it is our confident belief that our business during the last half of the year will show a larger amount than during the first half, and that the percentage of decrease from last year's business will thereby be lowered. We might add that at the present time our distribution is about 30 per cent. less than for the corresponding period of the year 1907."

Landers, Frary & Clark, New Britain, cutlery and hardware: "The orders that we receive indicate that the hardware trade, both jobbers and retailers, are short of goods, and filling in their stock, and we note a general improvement in our business, though not as much as we would like to see."

Berlin Construction Company, Berlin, Conn., steel buildings, bridges and structural work: "We are now running our plant 10 hr. a day, because of increased demand for structural shapes and bridge work, but we would not like to say that this full running time will be a permanent thing under present conditions."

Pilling Brass Company, Waterbury, Conn., brass, copper, German metal, &c.; 6-in. and narrower; 0.005 in. and thinner: "Slight improvement noted, necessitating running works six days a week for the past fortnight, not so much because of the increased volume of business as because customers demand immediate delivery of small orders."

Smith & Griggs Mfg. Company, Waterbury, Conn., brass specialties: "Works are running full time because of the receipt of many orders that cannot wait."

American Brass Company, Waterbury, Torrington, Ansonia, brass manufacturer: "All the plants are gradually lengthening hours and calling back help. Not all departments are on a six-days' schedule, but some are running more than 60 hr. a week.

American Ring Company, Waterbury, Conn., manufacturer of brass furniture trimmings, &c.: An improvement in business has been noted during the past month, which is experienced in common with industry generally in Waterbury.

Fletcher, Terry & Co., Forestville, Conn., glass cutters: Contracts have been received for large amounts of goods, which will probably make it necessary to enlarge the present factory by at least one-third when business shall be back to normal again.

The Sessions Clock Company, Forestville, Conn., has resumed operations after a two weeks' shutdown for inventory. Good advance orders are being received, indicating a decided improvement in the business situation.

The business of the Winchester Repeating Arms Company, New Haven, Conn., is showing some improvement over the past six months, although not normal for this season. Nearly all departments are running on full time, and many of the old employees are returning to their accustomed jobs.

One of the first direct results of the new compulsory working clause in the British patent act is the decision of the Clinton Wire Cloth Company, Clinton, Mass., to establish a plant in that country for the manufacture of its patented specialties. An agent has been sent to England for the purpose of selecting a site for the factory. Under this act an article protected by a British patent must be manufactured in that country, else the patent may be declared void and the invention made available to any one who might desire to employ it in Great Britain. The Clinton Company owns valuable patents on products which have a large sale in Great Britain and its dependencies. The Clinton Wire Cloth Company is planning to erect a new factory building this season, to be 175 x 228 ft., and either three or four stories. With its completion a rearrangement of departments will be made, to increase the productive capacity of the plant.

The National Spring Bed Company, New Britain, Conn., has increased its capital stock from $25,000 to $50,000, the increase being in the form of a stock dividend.

As to the report that the Wm. H. Page Boiler Company would rebuild its manufacturing plant at Norwich, Conn., destroyed by fire some months ago, the company states that there is no such intention. A warehouse will be maintained in Norwich to supply the Eastern trade, while manufacturing will be centered at Meadville, Pa., where new works have recently been occupied.

The Waterbury Enamel Company, Waterbury, Conn., manufacturer of watch, clock and meter indicator dials, is seeking a suitable site for a new factory which will be erected in the near future. The business was established last September. George J. Strobel is president and treasurer, and Herbert J. Phillips secretary and manager.

The Argand Boiler Company has been organized at South Norwalk, Conn., to manufacture the steam and hot water heaters formerly produced by the Colonial Foundry & Machinery Company of South Norwalk. Edward S. Meeker is the president, Charles H. Aisthorpe, treasurer, and William S. Folant, secretary. The capital stock is $6000.

The Library Bureau of Boston has purchased the factory property at Albany and Pacific streets, Cambridge, Mass., formerly occupied by the Hutchings-Votey Organ Company, and will occupy it for manufacturing, concentrating this end of the business, including the woodworking plant. The building is 95 x 210 ft., three stories and basement. Additional floors, increasing the manufacturing space to 80,000 sq. ft., are in process of construction.

The Hartford Electric Light Company, Hartford, Conn., has purchased the water power at Tariffville, Conn., on the Farmington River, which is a part of the lace mills plant, and will develop electric power to provide power for the mills. These have been purchased by the Bromleys, of Philadelphia, who will equip them with modern machinery and will manufacture lace goods.

The Carter & Hakes Machine Company, Winsted, Conn., manufacturer of milling machines and special machinery, has increased its capital stock from $25,000 to $50,000, the purpose of the new funds being to enlarge the company's plant, which has been done.

The New York, New Haven & Hartford Railroad announces that it has contracted for the construction of electric railroads in Connecticut totaling 20½ miles, comprising 11 miles between Wethersfield and Middletown, 3½ miles from Hartford to Bloomfield, and 6 miles from Willimantic and South Coventry. The aggregate expenditure will be about $1,000,000.

Various financial and mining interests, including Senator Clark and H. H. Rogers and others who represent the Missouri River Power Company, have arranged with the Stone & Webster Engineering Corporation, Boston, Mass., for the development of the extensive water power resources on the upper Missouri River in Montana. The plans provide for the ultimate generation of 50,000 hp. by means of two dams and power plants, the construction work to be done in two stages, the first to be the building of a concrete dam to afford 20,000 hp. at Hauser Creek, 60 miles from Butte, Mont., work on which will be started immediately. Later it is planned to build a new concrete dam about 1800

ft. long and 110 ft. high, together with a 30,000 hp. hydro-electric plant at Wolf Creek, a few miles above Hauser Creek, from which power will be transmitted at a high voltage to Butte and Helena. It is estimated that the work planned will cost $3,000,000.

The American Steam Gauge & Valve Mfg. Company, Boston, Mass., has recently appointed the Pittsburgh Steel Supply Company agent for the Pittsburgh District, and has made a number of changes in the sales department. J. B. Kane, who has been in the factory for several years, has been appointed a salesman, with headquarters in the New York office, and C. S. Kiessling, who was in the general offices, has been transferred to the Chicago office, in charge of the order department.

Philadelphia Machinery Market.

PHILADELPHIA, PA., July 21, 1908.

There is some diversity in the reports of machinery dealers and manufacturers as to the volume of new business and condition of the market during the past few weeks. In some directions there has been a fair amount of business transacted, while in others the volume coming out shows no appreciable gain. Trade, on the whole, is spotty, and frequently the full amount of the week's business is transacted in one or two days, and while current business scarcely warrants optimistic expressions, the trade feels that with the coming of the fall months there will be a buying movement, which will lead to more normal conditions. The undertone of the market continues strong, and while sales during the week have been small and confined, as a rule, to individual tools, there have been a few transactions of somewhat larger magnitude, the most important of which was that for the machinery equipment of the United States battleship South Carolina, representing an expenditure of some $7000 or $8000, most of which went to local concerns. Dealers report individual sales of lathes, drills and special tools, mostly of the medium sizes, but there is less being done in odds and ends than was the case some time ago. New inquiries are not reported as being very numerous, but there is more activity shown on the part of buyers who have been before the trade for some time, but deferred placing their orders, and it is believed that some business of this class will shortly be placed. Not much, however, is to be expected during the summer months, and if the same slight gain which has characterized the market generally during the past month or two is maintained, it will, as a rule, be considered satisfactory under the circumstances.

Manufacturers do not report any material gain in the amount of orders taken and with but few exceptions continue to operate their plants on a restricted basis. Tool builders are getting a fair share of the orders placed with dealers, although in a number of cases orders for individual standard tools are filled from stocks in dealers' warerooms, and as these stocks have been pretty large, manufacturers are not feeling the full effect of even the moderate volume of business.

No improvement is to be noted in the foreign demand. For some lines of tools the inquiry is practically nil, while in others it is very light. In power transmission specialties those transacting an established trade abroad report fewer orders, and those received are usually small in size.

The second-hand machine tool trade keeps up fairly well, dealers getting quite a pronounced share of that business, which, in prosperous times, usually goes in part to builders of new tools. Sales are reported fairly numerous, but are confined almost entirely to equipment of the medium and smaller size. The demand for second-hand boilers and engines shows no improvement, the volume of business transacted has been small, although there has been a shade more inquiry.

Iron and steel castings are not in very heavy demand and most of the foundries are operating on short time. Machinery castings, owing to the generally quiet condition of the trade, have been in weak demand and the generally unsatisfactory condition of the other branches of the trade withhold business usually going to the jobbing foundries. Steel casting plants, while they have picked up a little locomotive business, are still very short of orders and operate irregularly as a rule.

The Board of Surveys, Department of Public Works, has approved plans for the erection of two bridges, one across the Schuylkill River at Passayunk avenue, the other at Belfield street, over the Tabor branch of the Philadelphia & Reading Railroad. Proposals for bids for these bridges will be advertised for at an early date.

The County Controller, Wilkesbarre, Pa., will open bids in a few days for a motor generator, and static transformer in connection with the electrical power and light equipment for the new Luzerne County court house.

The Link Belt Company's weekly report of orders received at its local plant shows an improvement in the volume of business taken. Among those received was a sand batch elevator, raw fish conveyor, large extension for handling machinery at a sugar plant, lumber conveyor, belt conveyor equipment, and coal handling machinery for coke plant. The recent improvement in business as noted by this company lends encouragement to the outlook for the future.

The American Pulley Company notes a slight improvement for all wrought steel pulleys, but the size of individual orders is not large, the tendency of purchasers being to order for immediate needs only. Orders as a rule are irregular. Some days a very fair volume of business will develop, only to be followed by days on which orders are very light. Under the circumstances this company has not yet been able to operate its plant much beyond 50 per cent. of its capacity. The company, which usually conducts a large export business, reports foreign orders smaller, in number as well as volume.

The E. H. Mumford Company, manufacturer of foundry molding machines, reports a fair volume of business. So far orders for the month are hardly up to the total for June, but there is a very satisfactory volume of new business in sight, and recent inquiries are more encouraging. There has, however, been but little export demand. Shipments of molding machines during the month have not been large, but include a number of special design for gray iron foundry work.

Government Purchases.

WASHINGTON, D. C., July 21, 1908.

The Isthmian Canal Commission will receive bids until August 10, Circular No. 456, for a locomotive crane, stiff leg derrick, drilling and counter sinking machine, turbo generator, track and post drills, hydraulic jacks and other supplies.

The Isthmian Canal Commission will soon ask bids for ten 2-ton traveling cranes, ten hoisting motors, ten bridge motors, ten trolley motors and other supplies for a plant to be erected at Gatun, also one single spindle universal horizontal boring machine, one double cylinder timber planer, matcher and jointer, ten 50-ton heavy ball bearing ratchet screw bridge jacks, one heavy three-spindle vertical car boring machine, and a quantity of tin shop tools.

The following bids were opened July 14 for machinery for the navy yards:

Class 41.—One double surface planer—Bidder 7, American Wood Working Machinery Company, Rochester, N. Y., $1850; 14, Berlin Machine Works, Beloit, Wis., $1804.15; 44, J. A. Fay & Egan Company, New York, $2688, $2790 and $2906.40.

Class 42.—One self-feed circular rip saw—Bidder 7, American Wood Working Machinery Company, Rochester, N. Y., $260; 14, Berlin Machine Works, Beloit, Wis., $227.50 and $207.50; 16, Bentel & Margedant Company, Hamilton, Ohio, $270; 44, J. A. Fay & Egan Company, New York, $243.60, $268.80, $300.30 and $325.60; 125, H. B. Smith Machine Company, Smithville, N. J., $270; 148, Cordsman-Rechtin Company, Cincinnati, Ohio, $195; 156, Drew Machinery Agency, Manchester, N. H., $210, $251, $272 and $288.75.

Class 43.—One cold saw cutting-off machine—Bidder 18, Birdsboro Steel Foundry & Machine Company, Birdsboro, Pa., $1650; 48, Fairbanks Company, New York, $1495; 62, Handlan-Buck Mfg. Company, St. Louis, Mo., $1495; 91, Newton Machine Tool Works, Philadelphia, Pa., $1425; 103, S. M. Price Machinery Company, Norfolk, Va., $1435; 113, Quincy, Manchester, Sargent Company, Plainfield, N. J., $1252, $1260 and $1292; 163, Niles-Bement-Pond Company, New York, $1397, $1348 and $1273; 174, Tindel-Morris Company, Eddystone, Pa., $1135 and $1290.

Class 44.—One automatic saw sharpening machine—Bidder 18, Birdsboro Foundry & Machine Company, Birdsboro, Pa., $235; 48, Fairbanks Company, New York, $185; 62, Handlan-Buck Mfg. Company, St. Louis, Mo., $194.25; 91, Newton Machine Tool Works, Philadelphia, Pa., $140; 113, Quincy, Manchester, Sargent Company, Plainfield, N. J., $100; 156, Drew Machinery Agency, Manchester, N. H., $207 and $235.25; 174, Tindel-Morris Company, Eddystone, Pa., $178.

Class 71.—145 electric motors—Bidder 53, General Electric Company, Schenectady, N. Y., $19,146; 138, Western Electric Company, New York, $25,338.15; 139, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., $19,397.

Class 81.—One heavy double engine lathe—Bidder 55, Garvin Machine Company, New York, $9610; 71, I. H. Johnson, Jr., Company, Philadelphia, Pa., $12,123 and $12,545; 81, Manning, Maxwell & Moore, New York, $13,440; 163, Niles-Bement-Pond Company, New York, $15,435 and $10,965; 167, Prentiss Tool & Supply Company, New York, $11,975.

Class 176.—One duplex pump and one circulating pump—Bidder 9, Blake & Knowles Steam Pump Company, New York, $1473; 141, Warren Steam Pump Company, New York, $116.70; 155, M. T. Davidson Company, Brooklyn, N. Y., $1317.70.

Bids were opened at the office of the Isthmian Canal Commission July 15, for one valve re-seating machine, as follows:

Knox & Bro., New York, $175; Manning, Maxwell & Moore, New York, $175; Motley, Green & Co., New York, $175; Vermilye & Power, New York, $175.

Under bids opened May 25, Circular No. 440, for supplies for the Isthmian Canal Commission, Greenlee Brothers & Co., Chicago, Ill., have been awarded class 2, one vertical car tenoning machine, $785; class 3, one extra large automatic power gaining machine, $1120.

Under bids opened June 2, Circular No. 441, for machinery for the Isthmian Canal Commission, the Alberger Pump Company, New York, has been awarded class 1, one turbine pump, $5970.

PERSONAL.

Walter S. King, formerly Eastern manager of the Hill Clutch Company, Cleveland, Ohio, with headquarters in New York City, has resigned, and is now connected with the Sturtevant Mill Company of Boston. Mr. King has opened an office at 1206 Park Building, Pittsburgh, and will look after sales of crushing, grinding, screening and other machinery in West Virginia, Ohio and Pennsylvania.

The office of Walter L. Lee, purchasing agent of the Republic Iron & Steel Company, First National Bank Building, Chicago, has been transferred to Room 759, Frick Building Annex, Pittsburgh.

G. C. Parker, sales manager of the William J. Smith Company, New Haven, Conn., has been elected vice-president of the Colton Combination Tool Company, Easthampton, Mass., manufacturer of tool holders.

F. E. Reed, head of the F. E. Reed Company, Worcester, Mass., sustained severe though not dangerous injuries in an automobile accident in the White Mountains last week, a touring car in which he was riding turning over and pinning him beneath it.

William Kent, for the past five years connected with Syracuse University, Syracuse, N. Y., as dean and professor of mechanical engineering in the College of Applied Science, will devote a year to literary work, especially the revision of his two books, the "Mechanical Engineer's Pocket Book" and "Steam Boiler Economy."

Hollinshead W. Taylor of N. & G. Taylor Company, Philadelphia, sailed for Europe July 16 on the Princess Alice. He will remain several months, touring through France.

Wm. G. Starkweather will represent Robt. Wetherill & Co., Chester, Pa., after August 1 in New England, having charge of the sale of their Corliss engines, boilers and other power plant machinery.

Lee C. Moore, consulting engineer, with offices in the Fulton Building, Pittsburgh, left last week for Europe. After transacting business in Liverpool and London for a week, he will visit France, Germany and Belgium.

John G. Hezlep, for the past three years purchasing agent and traffic manager of the Pressed Radiator Company, Pittsburgh, has resigned, and will shortly take up a new line of work in Denver, Col.

E. F. Atwater of Poughkeepsie, N. Y., has been appointed receiver of the Poughkeepsie Iron Company, a close corporation.

John R. Morgan, formerly chief engineer of the Morgan Engineering Company, Alliance, Ohio, has been appointed general manager of the Calumet Engineering Works, Harvey, Ill.

James H. Nutt, secretary of the Western Bar Iron Association, visited Pittsburgh this week to confer with the officials of the Amalgamated Association of Iron, Steel and Tin Workers regarding the details of the new wage agreement just signed.

H. P. Ingels has recently been appointed Eastern representative of the Youngstown Car Mfg. Company, Youngstown, Ohio, with office at 90 West street, New York City.

William R. McKeen, Jr., has resigned his position as superintendent of motive power and machinery with the Union Pacific Railroad to devote his attention to the management of the McKeen Motor Car Company, which has been organized to manufacture the gasoline motor cars now in use on the Harriman lines. These cars are of 200 hp. capacity, and three years of operation have proved them an efficient and economical medium of transportation. They will be manufactured for the present at the old car shop of the Union Pacific Railroad at Omaha, Neb., where a new $1,000,000 car shop has just been completed. As soon as the organization of a permanent manufacturing plant has been perfected the building of the motor cars will be separated from the railroad work. The position of superintendent of motive power and machinery of the Union Pacific Railroad has been assumed by C. E. Fuller, formerly of the Chicago & Alton Railroad.

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HARDWARE

ONE of the principal problems before the retail Hardware association movement is in regard to making the annual State conventions so interesting and useful that they will not only secure and justify a large attendance, but also furnish a convincing argument to be used in efforts to increase their membership. In the early enthusiasm of the movement it may be that the coming together of the members and following an inadequate or carelessly devised programme will be in some measures satisfactory, and the association survive meetings for which no suitable preparation has been made. It cannot, however, be expected that the associations will continue to prosper, much less to attain the position and influence to which they are entitled, unless there is skill and care given to the arrangement of the programme and to the manner in which the various subjects considered are presented and discussed, with a view to making the meetings helpful and profitable along business lines. This should be the case to such an extent that merchants will feel not only that they have been repaid for coming, but that if they should be obliged to stay away from such meetings they would suffer a positive loss.

Without attempting a general discussion of this large subject we desire to call attention to one method, which, if wisely followed, may be made, we believe, an exceedingly interesting and helpful feature of a State convention. We refer to an INTERCHANGE OF DELEGATES BETWEEN THE ASSOCIATIONS IN NEIGHBORING STATES. These delegates should ordinarily be men active and prominent in the association work of their own States. Their duties would be to give friendly greetings and manifest the spirit of fraternity; to impart any information desired in regard to difficulties encountered and advantageous methods of working in association matters; to be ready to aid in discussions, and in general to contribute in any way in their power to the interest and enthusiasm of the gathering. On their return to their own association they should have a valuable report to make in view of their enlarged experience and the things seen and heard. Another result of this interchange of representative men would be the opportunity afforded to employ the talent of competent members who are not among the officers, who would thus be developed so that they would be more useful members of their own associations. All the State associations, it is safe to say, have men whose attendance would be greatly appreciated in a sister association. A person invested with the dignity of a delegate, especially if he were an up-to-date merchant and active association worker, would contribute materially to the interest and helpfulness of the gathering. In this way, beside the advantages to which we have referred, there would obviously be the bringing of the various State organizations into close touch with one another, thus correcting the isolation in which they at present are working. The extent to which this movement should be carried and many details, as, for example, the number of States to which delegates should be sent, and whether on their own charges or otherwise, would naturally depend on the special circumstances in each case. At this time we simply mention the matter that it may receive consideration from those who are interested in the improvement of association methods.

In this connection it should be noted, as mentioned in our last issue, that this matter was suggested at the recent meeting of the Carolinas Association, where the plan was broached and favorably regarded. We understand that it is likely that this association will take steps to carry out the suggestion, inviting delegates from and sending delegates to other States. At that convention, too, a member of the New York Association was present with a letter containing greeting and expressions of good-will, which were very pleasantly received and appropriately reciprocated. This incident and the approval of the plan by the Association of the Carolinas may be the beginning of a general movement which will mark a forward step in methods of association work. If this should prove to be the case this association, one of the youngest in the great movement will be entitled to the distinction of having set the seal of its approval on what may be a new departure in organization methods, the fruits of which will be found in the greater interest and increased success of many a State convention.

Condition of Trade.

The gradual improvement in the general situation which has recently been characteristic of the market continues with a perceptibly better feeling in commercial circles during the past week or two. Many influences are apparently uniting to give and justify increased confidence. Prominent among these is the fact that the country is steadily and safely working out of the financial troubles which clouded the sky at the beginning of the year. Money is more abundant than for a long time and is calling for investment. The assurance that the country is fundamentally well to do in both its manufacturing and agricultural activities is held with renewed confidence. There is, too, a growing feeling that corporations, and especially the railroads, will be accorded a more sane and reasonable treatment, which will justify a renewal of expenditures on their part in repairs and betterments. Great harvests at good prices, unless some improbable injury befalls the crops, promise to contribute an enormous sum to the wealth of the nation and to give employment again to railroads, which will very likely soon overtax their facilities. The proceeds of these crops will in turn give renewed activity in all the channels of trade. Stocks of merchandise during the past six months have been kept unusually low, and the necessity for replenishing them is more cheerfully recognized than even a few weeks ago. Whether or not in Iron and Steel lines and in Hardware and related products especially further reductions in price are to be anticipated, there is little reason to apprehend an abrupt break of large proportions, so that purchasing for near-by requirements is generally recognized as a safe and wise policy. In addition to these influences, the force of which cannot be denied, there is a general disposition to credit the manufacturers with conservatism in accepting sensibly the slump in business, and not attempting to induce unwilling buyers to place orders under the attraction of deeply cut prices. The practical shutting down of factories and almost withdrawing from the market for a while has helped greatly to hasten the return to a safe basis for normal business. When trade begins to move again with some freedom in its wonted channels there will probably be a temptation to put forth greater efforts

to secure business, and possibly by resorting to the old-time expedient of slaughtering prices. The trade are, however, apparently justified in hoping for a continuation of the conservative course of the manufacturers and jobbers, and notably of those identified with the Iron and Hardware interests who have done so much to keep the market steady and restore public confidence.

Chicago.

The past week has been productive of no developments tending to change market conditions in any important respect. From some sections of the country, especially in the Northwest, orders for current stock requirements have shown slight improvement, but on the whole there is no marked variation either way in the general volume of business. Not much complaint is heard among the leading local Hardware houses concerning shrunken demand; as matter of fact, some of them report that sales are running not far from the normal average for dull months. This experience would scarcely represent business on the aggregate, but at the same time is noticeably true that the local trade has shown a remarkable degree of vitality. It is receiving an increasing amount of support from building operations, which seem to be gradually extending. Building plans in the hands of the trade for estimates are fairly numerous, but they relate principally to dwellings, apartments and other structures of moderate size. A notable exception in this respect is the New La Salle Hotel, which will require around $45,000 worth of Builders' Hardware. Foundation work on this great hostelry is now well along and proceeding without halt, but the Hardware specifications have not yet been submitted for bids. Forward orders for fall and winter goods, such as Stoves, Stove Boards, Elbows, Coal Hods, Axes, &c., are beginning to come in, but dealers are following the same rule of conservatism in buying that has governed their forward purchases for the past eight months. This course does not necessarily imply the existence of a pessimistic feeling regarding the future outlook; it is more likely a reflection of the general belief that if the demand should exceed the provisions made to supply it, there would in any event be no difficulty in getting more goods when wanted. The promptness with which shipments have been made in recent months has enabled dealers to reduce stocks much below their normal standard without impairment of efficiency in meeting the needs of their customers, and so long as business can be thus satisfactorily handled with a decreased investment and no particular handicap in buying cost there is really no strong incentive to contract for goods in advance of actual stock requirements. The movement of Wire Nails continues fairly active, and prices are well maintained. Of many other lines the same cannot be said. There is, it is true, no noteworthy change in nominal quotations, but on many articles actual selling prices are largely determined by the circumstances surrounding each individual transaction. The market for Bolts is in this sense practically an open one, and in Hinges like conditions prevail. But, after all, in view of the pressure that has been brought to bear upon values by the long continued weight of depression, it is not so much a matter of surprise that some prices are more or less irregular, as it is that they are not utterly demoralized.

NOTES ON PRICES.

Wire Nails.—Demand continues in about the same volume that has characterized business at mills during the month. Orders are for near-by requirements and do not indicate any desire to anticipate the future. Prices appear to be regularly maintained. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$1.95
Carload lots to retail merchants	2.00
Less than carloads to jobbers	2.00
Less than carloads to retail merchants	2.10

New York.—Demand in the local market continues somewhat light, and orders are for small quantities. Quotations are on the basis of $2.30 per keg, in small lots at store.

Chicago.—No backward tendency is shown in the demand for Wire Nails, which continues to be sustained at the level of recent weeks, with possibly some evidence of improvement. Buying, however, is the same in character that it has been for some time, being confined to orders of moderate size for requirements as they develop. At the same time there is less of a disposition to question the stability of present values. The unwavering firmness of prices is strongly emphasized by market advices. Quotations are as follows: $2.13, in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—There is absolutely no change in the situation. Buying is of a hand to mouth character, but makes a better showing as compared with June than is usually the case in July. It is stated that prices are firmly maintained. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$1.95
Carload lots to retail merchants	2.00

Galvanized Nails are quoted at $1 over the price of the regular Nails.

Cut Nails.—There is nothing new to report regarding the conditions of the market. Demand continues very moderate and orders are for small lots. Quotations on Steel Nails are on the basis of $1.80 per keg, at mill, $1.75 being obtainable on the most desirable business. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

New York.—Local demand has shown no improvement, requirements being light, and orders for small quantities. Quotations are on the basis of $2.15 per keg for small lots at store.

Chicago.—What little trade there is in Cut Nails is largely confined to Shingle Nails, which are moving in small lots. Increasing work in car repair shops bids fair to make itself felt in moderate orders from this source. Especially desirable orders would probably command a concession of 5 cents a keg from ruling quotations, but on the general run of orders the market is fairly firm at prices named. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

Pittsburgh.—The volume of demand has shown no material change in the week, being only of moderate proportions. While the general market is quoted at $1.80 for Steel Cut Nails, it is still possible to do 5 cents less on very desirable orders. Iron Cut Nails are held at 10 cents above these prices.

Barb Wire.—Requirements are in accordance with the season, which are naturally light. Demand is constantly limited, but prices are referred to as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.10	$2.40
Retailers, carload lots	2.15	2.45
Retailers, less than carload lots	2.25	2.55

Chicago.—In accordance with the demands of the season not much new business is now being offered, but the prospects of a fair fall trade are quite promising. No departures from regular prices are reported. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; reailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Demand continues rather light, as is seasonable. Prices are stated to be well maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.10	$2.40
Retailers, carload lots	2.15	2.45
Retailers, less than carload lots	2.25	2.55

Plain Wire.—Buying is limited to moderate quantities, although indications point to quite a demand for Wire Fencing in the fall. Immediate requirements are apparently more considered in placing orders than anticipating future needs. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

Nos.	6 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.80	1.85	1.90	1.95	2.05	2.15	2.25	2.35
Galvanized	2.10	2.15	2.20	2.25	2.35	2.45	2.85	2.95

Chicago.—The prospects ahead for fall fence trade would ordinarily influence buyers to anticipate it by liberal forward orders, but with the easy deliveries now obtainable, and nothing in market conditions to induce speculative purchases, only immediate requirements are considered. These are of fairly good volume with a growing tendency. Prices are reported to be firmly maintained. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

Pittsburgh.—Demand is fairly good, but there is only a moderate amount of forward buying. Quotations to jobbers in carload lots are on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days.

Rope.—Some manufacturers express themselves as quite well satisfied with trade, considering that July and August are usually dull months. An increased demand is noticed for Pure Hard Fiber goods since prices have become lower, while some buyers continue to want the cheaper grades of Rope. Quotations are as follows: Pure Manila, 9½ to 10 cents; Pure Sisal, 6¼ to 6½ cents; No. 1 Jute, ¾-in. and up, 5¾ cents; No. 2 Jute, ¼-in. and up, 5¼ cents.

Binder Twine.—The market is referred to as irregular, as prices range from 7¾ to 8¼ cents, central delivery, often without regard to quantities. It is reported that some Twine is offered at lower than above figures.

Window Glass.—Conditions of the trade in the East continue unsatisfactory in regard to the volume of business, which is light. Manufacturers and Western jobbers report a larger demand at the advanced prices announced last week. There is said to be some talk of further advances in price by manufacturers early in August, but this is without official confirmation. Quotations are as follows: Hand Blown Glass from manufacturers' list of January 1, 1901, Single Strength, 90 and 27½ per cent., except 16 x 20, which is 90 and 22½ per cent.; Double Strength A Glass, 90 and 30 per cent.; Double Strength B Glass, 90 and 35 per cent., freight equalized with Columbus, Ohio, on all Western shipments. American Window Glass Company, machine blown Glass, manufacturers' list: Single Strength, 90 and 30 per cent., except 16 x 20 A Glass, which is 90 and 25 per cent.; Double Strength A Glass, 90 and 30 per cent.; Double Strength B Glass, 90 and 40 per cent.; Greenhouse selection, 90 and 35 per cent. Eastern Jobbers' Window Glass Association name as minimum price for all territory East of the Mississippi River, 90 and 30 per cent. discount for Single and 90 and 35 per cent. discount for Double Strength Glass, from jobbers' list October 1, 1903.

Linseed Oil.—Conditions remain unchanged in this market, in which a hand-to-mouth demand is the most prominent. The usual large buyers generally prefer waiting for further developments in the seed situation before placing contract orders, while crushers consider the future too uncertain to accept orders for delivery very far in advance. Some of the Southwestern Flaxseed has been harvested and the Northwestern crop is said to be progressing finely, with perhaps damage in some sections as the result of the recent heat wave. Car lots of Western Raw are held at 41 to 42 cents per gallon. Local quotations, in barrels, are as follows: State and Western Raw, 42 to 44 cents; City Raw, 44 to 45 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

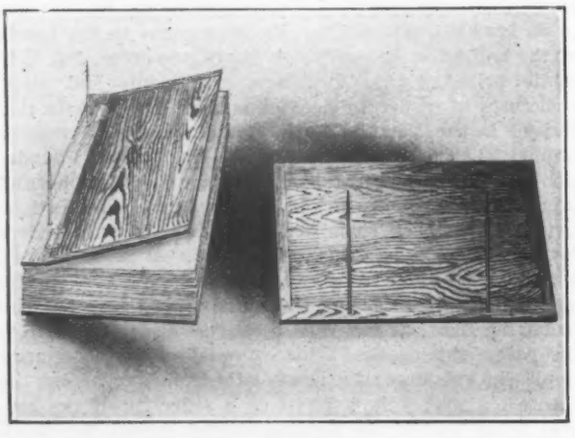
Spirits Turpentine.—The local market has been dull and demand light. Prices are steady at ½ cent reduction from those of last week. The New York market is represented by the following quotations: Oil Barrels, 42 to 42½ cents; Machine Made Barrels, 42½ to 43 cents per gallon.

A HOME MADE BINDER.

IN the well managed Hardware store of A. Douglas Law, Springfield, Mass., may be noted a number of original and practical ideas applying to different departments of the business. The bookkeeping system is a simple yet efficient one, embodying continuous monthly statements, with which readers of *The Iron Age* are generally familiar. This system necessitates keeping on file many carbon copies of statements covering open accounts, and for office convenience a dozen or so loose leaf binders are needed. Such binders, however, as furnished by stationers are rather elaborate and decidedly expensive, and in the store of Mr. Law

An Inexpensive Substitute

is used, an illustration of which is presented herewith. The covers of the binder are made of thin pieces of board, cut the proper size, with cleats fitted on each end



A Home Made Binder.

to make a smooth finish and prevent warping. Narrow strips of board, say, 2 or 2½ in. wide, are then attached to the lateral edges by brass hinges set in, as indicated in the illustration. These afford the flexibility necessary for the convenient use of the binders.

Fastening the Leaves.

The leaves are held in place by heavy wire bent through the hinged strip on the bottom cover, the upturned ends of which form two upright spindles fitting the perforations in the leaves. The side strip on the upper cover has two holes bored in it corresponding with the spindles and perforations, and making the binder complete. The total cost of a binder like this is estimated at about 50 cents, and it serves the purpose quite as well as a much more expensive affair, especially for inclosing leaves representing back business, which are infrequently referred to.

J. O. PERKINS, advertising manager for the wholesale mail order house of Butler Brothers, Chicago, New York, St. Louis and Minneapolis, died at his home in Ravenswood, Chicago, on the 14th inst. Mr. Perkins was born at Hustisford, Wis., in 1867, and at the age of 19 moved to Jefferson, Wis., where he published the Jefferson *Banner*, and, during his residence in that city, served a term as postmaster. Mr. Perkins, who removed to Chicago in 1898, was the author of several valuable booklets upon advertising and other business topics, which are held in high regard by the trade. Of these publications the booklets entitled "Retail Mail Order Problems," "The Problem of the General Merchant" and "The Bargain Basement," are best known, having attracted wide attention. He is survived by a widow and two sons, aged 15 and 18 years.

ILLUMINATING THE HARDWARE STORE.

BY CENTRAL.

THE matter of illumination is of interest to all business concerns, and particularly to the retail merchant. Any attempt to economize, which results in a poorly illuminated store, is a grave error of judgment. This applies to the interior of the store, the windows and the exterior. The fairly well lighted store may be successful in attracting a desirable patronage, but the brilliantly lighted store will always prove the greater attraction; its very brilliancy compels attention, and makes adjoining stores appear more dimly lighted than is really the case. When the gas mantle was first introduced some years ago, clever salesmen forced skeptical or unprogressive merchants to buy by interesting the adjoining storekeepers on both sides. The latter stores would be so much better lighted that the other had the appearance of being closed.

Securing Proper Light.

Illumination has made as great advances during the past few years as any part of the field of electricity or gas. The problem of how to secure proper light is not as easily determined as a few years ago when there was only one style of equipment. Now, the large variety of lamps and light distributers create a very different situation, and expert advice is frequently necessary to secure the correct color value, intensity, &c. Many electrical engineers now specialize by confining their attention to illumination.

More Light for Less Money Than Formerly.

Notwithstanding the remarkable development of electricity it has a strong competitor in gas, and there appears to be no reason to believe that it will not continue so. The lighting companies have in most cases adopted the broad policy of seeking the good will of their patrons by supplying them with the best light obtainable at a reasonable price, and by suggesting the use of modern equipment. The average store, therefore, can be much better lighted than a few years ago with little, if any, increase in cost.

Best Possible Equipment Important.

The importance of selecting the best possible equipment is shown by the experience of one large user of electric light. By adopting the newest equipment the efficiency of the light was doubled at one-third the former cost for current. The ordinary incandescent lamp is a 3½ watt lamp. Recent inventions, however, have gradually reduced the electrical energy required, so that the latest lamp burns but 1¼ watts, and electricians prophesy that this will be greatly reduced in time.

Shades and Reflectors.

To obtain the best results in lighting a store, the effect from various shades and reflectors should be considered. This is particularly important in lighting show cases or windows. The ordinary tin or porcelain shade reflects the light downward, but gives the effect of unevenness or streaks. The new glass prismatic reflectors distribute the light more evenly and wherever desired. To get the best results, it must be remembered that the ordinary incandescent lamp of 16 candlepower, throws a light of 16 candlepower only on the horizontal; the light it throws downward is very much less. It is important therefore to have the proper reflectors which will distribute the light where it is required, and thereby reduce the cost.

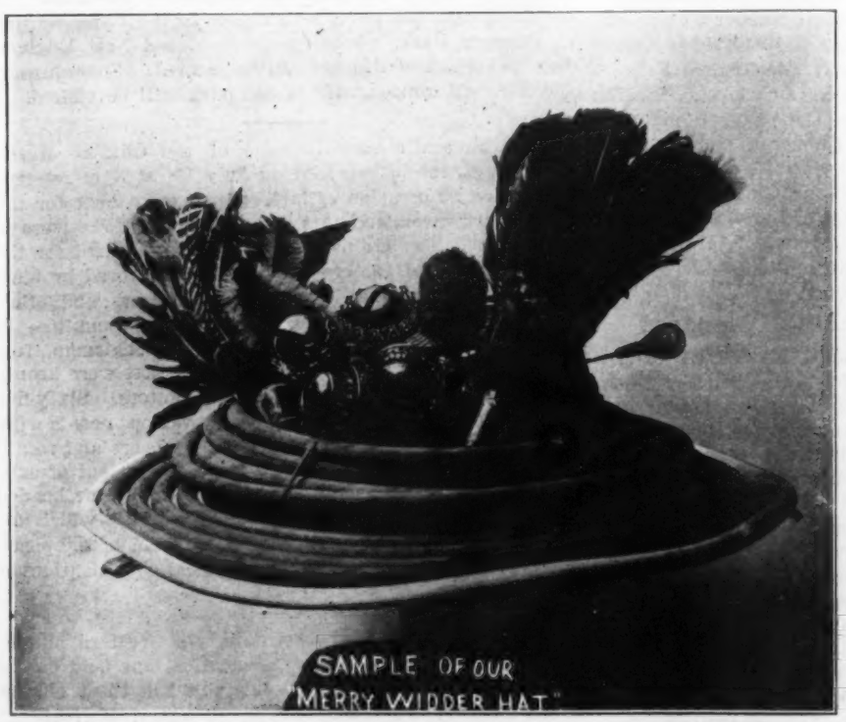
Gas Lamps Have Greatly Improved

during the past few years. The upright mantle lamp greatly reduces the consumption of gas, and makes a remarkably brilliant light. The newer lights, with the inverted burner, are an improvement, as some of them give two-thirds more light downward than the old upright ones.

A comparison of the cost of electricity and gas was recently made by a thoroughly efficient engineer, which showed gas to be the cheaper. Comparing the most efficient gas light and the most efficient electric, electricity will cost about 40 per cent. more than gas.

MERRY WIDOW HAT WINDOW DISPLAY.

MUCH ingenuity in conception as well as in arrangement, is shown in the Merry Widow Hat illustrated herewith, which was displayed in one of the show windows of the Knapp-Cramer Hardware Company, North Tonawanda, N. Y., a short time since. The display resulted in drawing a number of people to the store to buy Hose. The hat was about 3 ft. in diameter, made by winding 100 ft. of garden Hose around a wire Ash Sieve, which formed the frame and crown. The rim was also formed with the Hose, all being supported upon a standard with cross pieces. The trimmings included two feather dusters for plumes, two bottle brushes for pompons, two scratch Awls for hat pins, and four large brass Lamp Burners as roses. It is hardly necessary to say that this choice confection of millinery attracted a great deal of attention from the ladies, while the sterner sex also studied the exhibit with much interest.



Merry Widow Hat Window Display.

WE regret to find that the name and address of the Fowler Nail Company, Seymour, Conn., were inadvertently omitted under the head of "Nails, Horseshoe" in the 1908 edition of The Iron Age Directory recently issued. We shall be pleased if the trade will note the omission and bear the company in mind when making use of the Directory in this connection.

J. V. D. Wymelenberg, Wrightstown, Wis., is about to add to his stock of general merchandise a full line of Hardware, Paints, &c., continuing the business after August 1 under the style of J. V. D. Wymelenberg & Son.

Death of Charles H. Dale.

CHARLES H. DALE, prominent in rubber manufacturing and financial circles, died after a short illness, July 18, of heart disease, in his summer home at Larchmont Manor. He was born in New York City, and was in his fifty-seventh year. In earlier years he was a conductor on the West Shore Railroad. He invented and patented a hose coupling device which through royalties gave him a start toward fortune and led him into the production of rubber goods. He was essentially a self-made man, rising as the result of inherent ability and untiring industry. His first marked progress was with the Peerless Rubber Company, which advanced rapidly under his administration and guidance. He later sold his interest to the Rubber Goods Mfg. Company, when it was organized, and a few years later became president of the company.

A strong characteristic in Mr. Dale's nature and which he inculcated in those about him was loyalty to the interests he or those under him served. As position and influence came in his own career he promoted subordinates, who had been for years with the various companies with which he was identified, thus getting the advantage of their thorough familiarity with the details in the different companies. He possessed in large degree the faculty of getting close to employees in every station, from wage earners in factories to high executive officials in the offices, by whom he was respected and esteemed to an unusual degree.

Some idea of the influence he exercised in business and social life is indicated by an enumeration of some of the interests he was identified with. He was president and director of the Rubber Goods Mfg. Company, New York Belting & Packing Company, Peerless Rubber Mfg. Company, American Commerce Company, Mechanical Rubber Company and Morgan & Wright Company of Detroit. He was a director in the following organizations: American Dunlop Tire Company, Fabric Fire Hose Company, G. & J. Tire Company, General Rubber Company, Hartford Rubber Works Company, India Rubber Company, Indianapolis Rubber Company, Mechanical Fabric Company, Morgan & Wright Company of Chicago, Single Tube Automobile & Bicycle Tire Company, Stoughton Rubber Company, United States Rubber Company, Century Bank and Merchants' Exchange National Bank. He was a member of the Union League Club, New York Athletic Club, New York Yacht Club, Larchmont Yacht Club and the Automobile Club of America. He is survived by a widow and one daughter.

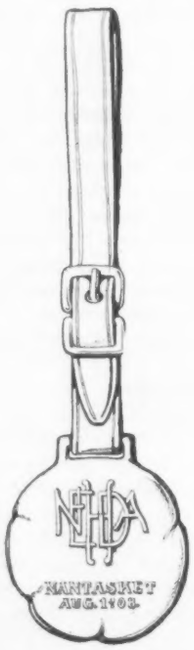
Charleston Metallic Packing Company.

THE CHARLESTON METALLIC PACKING COMPANY, Charleston, S. C., has established a New York office at 253 Broadway and is now soliciting inquiries from those who are in the market for its product. The company manufactures Packing in any form, made from Asbestos, Rubber or Flax, including Steam, Ammonia, Gas, Air, Oil and Hot or Cold Water Packings, Rings, Spiral or Coil Form, Locomotive Throttle or Air Pump Packing and Gaskets. While it has for some time been active in the South, the company is just entering the New York market. Its officers are: C. B. Jenkins, president; M. B. Barkley, vice-president, and J. R. Thomas, secretary and treasurer, all of whom are also officers of the Cameron & Barkley Company, a prominent machinery and supply house of Charleston, S. C., and Tampa, Fla. Equipped with up-to-date machinery, employing expert workmen and using only the best material, the company expresses the intention of furnishing only the highest grade of Packing. The New York office is under the management of E. H. Griffith, who is well known to the local trade through his 17 years' connection with the sales department of a prominent Leather Belting manufacturer.

The Hardware firm of Eddy Bros., Fairbury, Ill., has, upon the retirement of Henry Eddy, been changed to J. E. Eddy & Co. The business comprising a general line of Hardware, Furnaces, Lightning Rods, Plumbing and Tin Work will be continued as heretofore.

Hardware Organizations.

The New England Hardware Dealers' Association will hold an outing at Nantasket Beach, Boston Harbor, Saturday, August 1. The party will include not only members of the association, but manufacturers and jobbers as well. The committee in charge consists of F. Alexander Chandler, 36 Federal street, Boston, chairman; H. H. Sawyer, Providence, R. I.; H. M. Sanders, Boston; S. H. Thompson, Lowell, Mass.; C. L. Underhill, Somerville, Mass.; H. L. Russell, Holyoke, Mass., and F. E. Stacy, Springfield, Mass. A large representation of the trade from different sections of New England is expected. The programme of sports includes a baseball game, fat men's race, hurdle race, &c. The ball game will be between teams representing the merchants and traveling salesmen, and the members of the winning team will be presented with beautifully engraved silver fobs. F. E. Stacy, president of the Western Massachusetts Hardware Dealers' Association, Springfield, will captain the merchants' nine, and John W. Rathbun of the S. W. Card Mfg. Company, Mansfield, Mass., will lead the Knights of the Grip. After the games the party will repair to the Palm Garden at Paragon Park, where an old-fashioned New England fish and chicken dinner will be served. Subsequently the different amusements in the park will be visited.



The thirteenth annual picnic of the Chicago Retail Hardware Association, held on July 15, at Northwestern Park, was an occasion of interest and enjoyment for the many Hardware merchants and their friends who were in attendance. Two trains of 18 cars were required for the transportation of the crowd, which was favored by ideal weather. An extended programme of races and other features of entertainment arranged by the committee on sports, of which G. A. Englehardt was chairman, furnished a constant series of amusements that were keenly enjoyed by both participants and spectators. Sixty-five different prizes for the winners in the various events were supplied by Hardware manufacturers, jobbers and retailers. These were composed of a large assortment of articles which were arranged for by a prize committee, headed by W. H. Bennett. The unflagging interest which attaches to this annual gathering is significant of the pleasant relations established through local organization of this character.

The fifteenth annual meeting of the Western Massachusetts Hardware Dealers' Association was held at the Highland Hotel, Springfield, July 8, when these officers were elected: President, Frank E. Stacy, Springfield; vice-president, A. J. Osborne, Holyoke; secretary and treasurer, W. A. Pearson, Holyoke; directors, the officers and Francis D. Foot, Springfield; Oliver C. Alderman, Springfield; Henry L. Russell, Holyoke, and Fred F. Shepard, Westfield. A banquet followed the business meeting.

THE MERIDEN CUTLERY COMPANY, Meriden, Conn., manufacturer of an extensive line of Table Cutlery, has just issued its new catalogue No. 17, in which a noteworthy change has been made in the method of listing goods. The company expresses the belief that the trade has found difficulty in finding the price of articles in

catalogues where price-lists were separated from illustrations. In this book, therefore, all lists and illustrations are printed in conjunction, so that prices and details may be taken in at a glance. These illustrations and lists are also a great assistance to retail purchasers and may be shown without hesitation, as the merchant is fully protected by discounts.

Production of Cut and Wire Nails in 1907.

THE annual report of the American Iron and Steel Association, James M. Swank, general manager, has just been issued. It shows that the production of Cut Nails and Cut Spikes in 1907 amounted to 1,109,138 kegs of 100 lb. each, against 1,189,239 kegs in 1906, a decrease of 80,101 kegs. The following table gives the production of Cut Nails and Cut Spikes by States in 1906 and 1907, Iron Nails being separated from Steel Nails for both years; in 1907 a little over 72 per cent. was cut from steel plate and almost 28 per cent. from iron plate:

	1906.			1907.		
States.	Iron.	Steel.	Kegs. Total.	Iron.	Steel.	Kegs. Total.
Pennsylvania	279,607	378,229	657,836	267,065	397,933	664,998
West Virginia and Indiana	.....	208,935	208,935	.....	175,549	175,549
Massachusetts and Ohio	.....	114,400	114,400	.....	102,333	102,333
Kentucky, Illinois and California	70,158	137,910	208,068	42,903	123,355	166,258
Total	349,765	839,474	1,189,239	309,968	799,170	1,109,138

Sixteen works in seven States made Cut Nails in 1907, as compared with 16 works in eight States in 1906. Indiana was the only State enumerated in the above table which was not a producer in 1907.

The following table gives the production by States of Cut Nails and Cut Spikes from 1902 to 1907; with the exception of 1905 there has been a steady decline in production since 1902:

States—Kegs.	1902.	1903.	1904.	1905.	1906.	1907.
Pennsylvania	752,729	725,000	698,326	757,407	657,836	664,998
West Virginia and Indiana	271,362	274,808	245,997	210,345	208,935	175,549
Massachusetts and Ohio	267,901	203,138	182,981	158,113	114,400	102,333
Maryland, Virginia, Kentucky, Illinois, Wisconsin and California	341,770	232,947	156,058	231,684	208,068	166,258
Total	1,633,762	1,435,893	1,283,362	1,357,549	1,189,239	1,109,138

In 1907 exports of Cut Nails and Cut Spikes amounted to 15,521,208 lb., equivalent to 155,212 kegs of 100 lb., against 16,951,893 lb., or 169,519 kegs in 1906. Imports of Cut Nails and Cut Spikes are now only nominal.

Production of Wire Nails.

The production of Wire Nails in 1907 amounted to 11,731,044 kegs of 100 lb., as compared with 11,486,647 kegs in 1906, an increase of 244,397 kegs, or over 2.1 per cent.

The following table gives the production of Wire Nails by States in 1905, 1906 and 1907 in kegs of 100 lb.:

States.	1905.	1906.	1907.
New Hampshire, Massachusetts, Rhode Island and Connecticut	264,024	281,472	263,487
New York, New Jersey and Pennsylvania	4,504,376	4,688,071	4,787,311
Maryland, Kentucky, Georgia, Alabama and Ohio	2,861,587	3,163,214	3,057,620
Indiana and Illinois	2,531,774	2,735,915	2,941,216
Michigan, Wisconsin and Colorado	693,131	617,975	681,410
Total	10,854,892	11,486,647	11,731,044

The Wire Nails produced in 1907 were made by 48 works in 14 States, as compared with 49 works in 14 States in 1906, 54 works in 16 States in 1905, and 56 works in 16 States in 1904. Steel Wire Nails only were made.

The exports of Wire Nails in 1907 amounted to 94,503,450 lb., or 945,034 kegs, against 103,570,539 lb., or 1,035,705 kegs, in 1906. Very few Wire Nails are imported.

Comparative Production of Cut and Wire Nails.

In the following table we give the production in kegs of 100 lb. of standard sizes of Cut Nails and Spikes cut from plates, from 1896 to 1907; also the production of standard sizes of Wire Nails during the same period. The annual increase of Wire Nails over Cut Nails in the 12 years is also shown. The maximum production of 8,160,973 kegs of Cut Nails was reached in 1886 and the maximum of 11,926,661 kegs of Wire Nails in 1904:

Years.	Cut nails. Kegs.	Wire nails. Kegs.	Total. Kegs.	Wire nails over cut.
1896.....	1,615,870	4,719,860	6,335,730	3,103,990
1897.....	2,106,799	8,997,245	11,104,044	6,890,446
1898.....	1,572,221	7,418,475	8,990,696	5,846,254
1899.....	1,904,340	7,618,130	9,522,470	5,713,790
1900.....	1,573,494	7,233,979	8,807,473	5,660,485
1901.....	1,542,240	9,803,822	11,346,062	8,261,582
1902.....	1,633,762	10,982,246	12,616,008	9,348,484
1903.....	1,435,893	9,631,661	11,067,554	8,195,768
1904.....	1,283,362	11,926,661	13,210,023	10,643,299
1905.....	1,357,549	10,854,892	12,212,441	9,497,343
1906.....	1,189,239	11,486,647	12,675,886	10,297,408
1907.....	1,109,138	11,731,044	12,840,182	10,621,906

AMONG THE HARDWARE TRADE.

The Emmons-Hawkins Hardware Company has purchased the stock of Koontz Hardware Company, Huntington, W. Va., and has moved it to its own quarters. The company handles Shelf and Heavy Hardware, Agricultural Implements, Paints, Oils, Sporting Goods, Sash, Doors, &c.

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The Williams Hardware Company, Shreveport, La., has been incorporated with a capital of $10,000, and will do a retail business in Shelf Hardware, Stoves, Tinware, Paints and Sporting Goods.

The Stofer Mercantile Company, Snyder, Neb., will open up in Hedrick, Neb., about August 1 with a new stock of Hardware, Implements, &c.

The Thompson Bros. Company, Memphis, Texas, has been incorporated with a capital of $25,000, and will enlarge its quarters in the fall.

The King City Hardware Company, King City, Mo., has increased its capital stock from $16,000 to $25,000, for the purpose of developing the grain and seed end of the business, in which it is now extensively engaged. The management remains unchanged.

A. F. BROMBACHER & Co., 29-31 Fulton street, New York, have issued an interesting illustrated booklet of 16 pages, in which is recounted some of the history of the business which was originally conducted under the title of H. & C. Van Wagenen from 1760 to 1800. A map of New York in 1728 and one in 1908, together with views of the store at 33 and 34 Fulton street in 1808, and the present store at 29-31 Fulton street are a part of the pamphlet.

Death of Charles H. Dale.

CHARLES H. DALE, prominent in rubber manufacturing and financial circles, died after a short illness, July 18, of heart disease, in his summer home at Larchmont Manor. He was born in New York City, and was in his fifty-seventh year. In earlier years he was a conductor on the West Shore Railroad. He invented and patented a hose coupling device which through royalties gave him a start toward fortune and led him into the production of rubber goods. He was essentially a self-made man, rising as the result of inherent ability and untiring industry. His first marked progress was with the Peerless Rubber Company, which advanced rapidly under his administration and guidance. He later sold his interest to the Rubber Goods Mfg. Company, when it was organized, and a few years later became president of the company.

A strong characteristic in Mr. Dale's nature and which he inculcated in those about him was loyalty to the interests he or those under him served. As position and influence came in his own career he promoted subordinates, who had been for years with the various companies with which he was identified, thus getting the advantage of their thorough familiarity with the details in the different companies. He possessed in large degree the faculty of getting close to employees in every station, from wage earners in factories to high executive officials in the offices, by whom he was respected and esteemed to an unusual degree.

Some idea of the influence he exercised in business and social life is indicated by an enumeration of some of the interests he was identified with. He was president and director of the Rubber Goods Mfg. Company, New York Belting & Packing Company, Peerless Rubber Mfg. Company, American Commerce Company, Mechanical Rubber Company and Morgan & Wright Company of Detroit. He was a director in the following organizations: American Dunlop Tire Company, Fabric Fire Hose Company, G. & J. Tire Company, General Rubber Company, Hartford Rubber Works Company, India Rubber Company, Indianapolis Rubber Company, Mechanical Fabric Company, Morgan & Wright Company of Chicago, Single Tube Automobile & Bicycle Tire Company, Stoughton Rubber Company, United States Rubber Company, Century Bank and Merchants' Exchange National Bank. He was a member of the Union League Club, New York Athletic Club, New York Yacht Club, Larchmont Yacht Club and the Automobile Club of America. He is survived by a widow and one daughter.

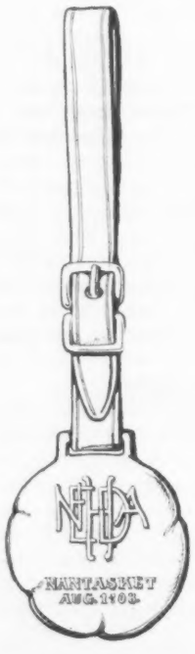
Charleston Metallic Packing Company.

THE CHARLESTON METALLIC PACKING COMPANY, Charleston, S. C., has established a New York office at 253 Broadway and is now soliciting inquiries from those who are in the market for its product. The company manufactures Packing in any form, made from Asbestos, Rubber or Flax, including Steam, Ammonia, Gas, Air, Oil and Hot or Cold Water Packings, Rings, Spiral or Coil Form, Locomotive Throttle or Air Pump Packing and Gaskets. While it has for some time been active in the South, the company is just entering the New York market. Its officers are: C. B. Jenkins, president; M. B. Barkley, vice-president, and J. R. Thomas, secretary and treasurer, all of whom are also officers of the Cameron & Barkley Company, a prominent machinery and supply house of Charleston, S. C., and Tampa, Fla. Equipped with up-to-date machinery, employing expert workmen and using only the best material, the company expresses the intention of furnishing only the highest grade of Packing. The New York office is under the management of E. H. Griffith, who is well known to the local trade through his 17 years' connection with the sales department of a prominent Leather Belting manufacturer.

The Hardware firm of Eddy Bros., Fairbury, Ill., has, upon the retirement of Henry Eddy, been changed to J. E. Eddy & Co. The business comprising a general line of Hardware, Furnaces, Lightning Rods, Plumbing and Tin Work will be continued as heretofore.

Hardware Organizations.

The New England Hardware Dealers' Association will hold an outing at Nantasket Beach, Boston Harbor, Saturday, August 1. The party will include not only members of the association, but manufacturers and jobbers as well. The committee in charge consists of F. Alexander Chandler, 36 Federal street, Boston, chairman; H. H. Sawyer, Providence, R. I.; H. M. Sanders, Boston; S. H. Thompson, Lowell, Mass.; C. L. Underhill, Somerville, Mass.; H. L. Russell, Holyoke, Mass., and F. E. Stacy, Springfield, Mass. A large representation of the trade from different sections of New England is expected. The programme of sports includes a baseball game, fat men's race, hurdle race, &c. The ball game will be between teams representing the merchants and traveling salesmen, and the members of the winning team will be presented with beautifully engraved silver fobs. F. E. Stacy, president of the Western Massachusetts Hardware Dealers' Association, Springfield, will captain the merchants' nine, and John W. Rathbun of the S. W. Card Mfg. Company, Mansfield, Mass., will lead the Knights of the Grip. After the games the party will repair to the Palm Garden at Paragon Park, where an old-fashioned New England fish and chicken dinner will be served. Subsequently the different amusements in the park will be visited.



The thirteenth annual picnic of the Chicago Retail Hardware Association, held on July 15, at Northwestern Park, was an occasion of interest and enjoyment for the many Hardware merchants and their friends who were in attendance. Two trains of 18 cars were required for the transportation of the crowd, which was favored by ideal weather. An extended programme of races and other features of entertainment arranged by the committee on sports, of which G. A. Englehardt was chairman, furnished a constant series of amusements that were keenly enjoyed by both participants and spectators. Sixty-five different prizes for the winners in the various events were supplied by Hardware manufacturers, jobbers and retailers. These were composed of a large assortment of articles which were arranged for by a prize committee, headed by W. H. Bennett. The unflagging interest which attaches to this annual gathering is significant of the pleasant relations established through local organization of this character.

The fifteenth annual meeting of the Western Massachusetts Hardware Dealers' Association was held at the Highland Hotel, Springfield, July 8, when these officers were elected: President, Frank E. Stacy, Springfield; vice-president, A. J. Osborne, Holyoke; secretary and treasurer, W. A. Pearson, Holyoke; directors, the officers and Francis D. Foot, Springfield; Oliver C. Alderman, Springfield; Henry L. Russell, Holyoke, and Fred F. Shepard, Westfield. A banquet followed the business meeting.

THE MERIDEN CUTLERY COMPANY, Meriden, Conn., manufacturer of an extensive line of Table Cutlery, has just issued its new catalogue No. 17, in which a noteworthy change has been made in the method of listing goods. The company expresses the belief that the trade has found difficulty in finding the price of articles in

catalogues where price-lists were separated from illustrations. In this book, therefore, all lists and illustrations are printed in conjunction, so that prices and details may be taken in at a glance. These illustrations and lists are also a great assistance to retail purchasers and may be shown without hesitation, as the merchant is fully protected by discounts.

Production of Cut and Wire Nails in 1907.

THE annual report of the American Iron and Steel Association, James M. Swank, general manager, has just been issued. It shows that the production of Cut Nails and Cut Spikes in 1907 amounted to 1,109,138 kegs of 100 lb. each, against 1,189,239 kegs in 1906, a decrease of 80,101 kegs. The following table gives the production of Cut Nails and Cut Spikes by States in 1906 and 1907, Iron Nails being separated from Steel Nails for both years; in 1907 a little over 72 per cent. was cut from steel plate and almost 28 per cent. from iron plate:

	1906.			1907.		
States.	Iron.	Steel.	Kegs. Total.	Iron.	Steel.	Kegs. Total.
Pennsylvania	279,607	378,229	657,836	267,065	397,933	664,998
West Virginia and Indiana	.....	208,935	208,935	.....	175,549	175,549
Massachusetts and Ohio	.....	114,400	114,400	.....	102,333	102,333
Kentucky, Illinois and California	70,158	137,910	208,068	42,903	123,355	166,258
Total	349,765	839,474	1,189,239	309,968	799,170	1,109,138

Sixteen works in seven States made Cut Nails in 1907, as compared with 16 works in eight States in 1906. Indiana was the only State enumerated in the above table which was not a producer in 1907.

The following table gives the production by States of Cut Nails and Cut Spikes from 1902 to 1907; with the exception of 1905 there has been a steady decline in production since 1902:

States—Kegs.	1902.	1903.	1904.	1905.	1906.	1907.
Pennsylvania	752,729	725,000	698,326	757,407	657,836	664,998
West Virginia and Indiana	271,362	274,808	245,997	210,345	208,935	175,549
Massachusetts and Ohio	267,901	203,138	182,981	158,113	114,400	102,333
Maryland, Virginia, Kentucky, Illinois, Wisconsin and California	341,770	232,947	156,058	231,684	208,068	166,258
Total	1,633,762	1,435,893	1,283,362	1,357,549	1,189,239	1,109,138

In 1907 exports of Cut Nails and Cut Spikes amounted to 15,521,208 lb., equivalent to 155,212 kegs of 100 lb., against 16,951,893 lb., or 169,519 kegs in 1906. Imports of Cut Nails and Cut Spikes are now only nominal.

Production of Wire Nails.

The production of Wire Nails in 1907 amounted to 11,731,044 kegs of 100 lb., as compared with 11,486,647 kegs in 1906, an increase of 244,397 kegs, or over 2.1 per cent.

The following table gives the production of Wire Nails by States in 1905, 1906 and 1907 in kegs of 100 lb.:

States.	1905.	1906.	1907.
New Hampshire, Massachusetts, Rhode Island and Connecticut	264,024	281,472	263,487
New York, New Jersey and Pennsylvania	4,504,376	4,688,071	4,787,311
Maryland, Kentucky, Georgia, Alabama and Ohio	2,861,587	3,163,214	3,057,620
Indiana and Illinois	2,531,774	2,735,915	2,941,216
Michigan, Wisconsin and Colorado	693,131	617,975	681,410
Total	10,854,892	11,486,647	11,731,044

The Wire Nails produced in 1907 were made by 48 works in 14 States, as compared with 49 works in 14 States in 1906, 54 works in 16 States in 1905, and 56 works in 16 States in 1904. Steel Wire Nails only were made.

The exports of Wire Nails in 1907 amounted to 94,503,450 lb., or 945,034 kegs, against 103,570,539 lb., or 1,035,705 kegs, in 1906. Very few Wire Nails are imported.

Comparative Production of Cut and Wire Nails.

In the following table we give the production in kegs of 100 lb. of standard sizes of Cut Nails and Spikes cut from plates, from 1896 to 1907; also the production of standard sizes of Wire Nails during the same period. The annual increase of Wire Nails over Cut Nails in the 12 years is also shown. The maximum production of 8,160,973 kegs of Cut Nails was reached in 1886 and the maximum of 11,926,661 kegs of Wire Nails in 1904:

Years.	Cut nails. Kegs.	Wire nails. Kegs.	Total. Kegs.	Wire nails over cut.
1896.....	1,615,870	4,719,860	6,335,730	3,103,990
1897.....	2,106,799	8,997,245	11,104,044	6,890,446
1898.....	1,572,221	7,418,475	8,990,696	5,846,254
1899.....	1,904,340	7,618,130	9,522,470	5,713,790
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EXPERIMENTAL PARCEL POST WILL BE THE PROGRAMME OF THE "REFORMERS."

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., July 21, 1908.

RETAIL merchants would seem to have been justified in believing that the Post Office Department would accept as final and conclusive the rejection by Congress of the various parcel post projects which were so strongly urged throughout the past winter. It is a fact, however, that plans have already been formulated for another campaign to be waged at the short session beginning next December, the object of which will be to secure a special appropriation to establish an experimental parcel post on rural routes. The department officials evidently hope that in the event of securing this entering wedge a strong demand for an extension of the service can be created based upon rose colored reports regarding the results of the proposed experiment. It is apparent, therefore, that retailers have another hard fight ahead of them, and it goes without saying that they should promptly take the matter up with their Senators and Representatives before the latter have been induced to pledge their support to what is being urged as a "reasonable compromise."

Another Hard Fight in Prospect.

Readers of *The Iron Age* will remember that the Department's plan as originally put forward a year ago involved the inauguration of a parcel post on all rural routes under conditions as to weight, rates, &c., practically identical with those provided in the Hearst and Henry bills for a complete parcel post system. When it became apparent that this plan as incorporated in the Burnham bill, supplemented by the Kean measure, raising the limit of weight of merchandise throughout the service, could not pass, the Post Office Department made an urgent request of the Senate Post Office Committee for an appropriation of $10,000 to test the rural parcel post scheme on a few routes to be designated by the Postmaster-General. This recommendation did not reach the Senate, however, until the consideration of the bill was practically completed, and no vote was had upon the proposition. After reviewing carefully the work of the past year, the department officials have reached the conclusion that they will be able to operate along the line of the least resistance if they follow the tactics employed in the inauguration of the rural free delivery, when an appropriation of $10,000 was used to stimulate a demand from a relatively small proportion of the population with such effect that to-day the Government is spending more than $35,000,000 on the rural delivery, of which four-fifths is a deficit to be met by the taxpayers at large.

Line of Least Resistance Will Be Followed.

The publicity bureau of the postal service is already at work in the interest of the proposed "experiment." The press correspondents here are being daily advised of the calculations by which the postal deficit will disappear when the parcel post is established on rural routes, and the specious argument is put forward that no sound reason can be cited against an experiment that can easily be abandoned if the results do not justify the claims heretofore made. This is precisely the argument that was employed when rural free delivery was first proposed, and for at least three years after the first appropriation was made Congress was induced to increase the annual allotment on the ground that the money available was "insufficient to fully test the institution." By the time it became apparent that the annual cost of the service would run into many millions, the demand for it in the rural districts and its value as a political machine to Senators and Representatives were so strongly in evidence that no possible influence could check its expansion. It remains to be seen whether Congress next winter will permit the history of the establishment of the rural free delivery to be repeated in the authorization of a limited parcel post.

Argument Offered for Experimental Parcel Post.

Some exceedingly interesting postal statistics have been compiled since the beginning of the new fiscal year on the first inst. The deficit for the year ended June 30, 1908, will somewhat exceed $15,000,000, which is approximately high water mark for the excess of expenditures over receipts. In making these figures public, however, the department calls attention to the estimates, so often referred to during last winter's campaign, designed to demonstrate that a very limited patronage of the proposed rural parcel post would wipe out the entire shortage. Of course, it is hardly necessary to call attention to the fact that these estimates are based upon a horizontal distribution of the proposed new business among all the routes of the service in such a way as to require absolutely no new equipment or increase in the personnel. Unfortunately, business does not develop in any such symmetrical manner, and there can be no doubt that thousands of routes would show practically no increased patronage long after the business on other routes had assumed such proportions as to require a heavy equipment of trucks and drays to handle it.

The Department's View of $15,000,000 Deficit.

The appropriation for rural free delivery for the fiscal year just begun, as finally adjusted in conference in the annual post office budget bill, is $35,573,000. This is based upon a maximum salary for carriers of $900 per annum, the House having refused to accede to the increase to $1000 made by the Senate. The total appropriation for increase in the rural service covered by this sum is $300,000 less than the department's estimate, and the whole amount is but $673,000 more than the appropriation for the year ended June 30, 1908. Careful calculations made by the officials of the rural free delivery service show that the increased appropriation will justify the establishment of only 588 new routes during the new fiscal year. It has been determined to prorate this number throughout the year, 49 new routes to be authorized monthly. As more than 588 petitions for new routes have already been received and favorably reported upon, it is obvious that no new service not already approved can be installed during the coming year. In view of these conditions the Department will give considerable attention to the readjustment of the service in the various districts, and the discontinuance of unnecessary routes will permit the installation of a limited amount of new service not covered by the increased appropriation. It is obvious, however, that the reckless expansion of rural free delivery, which in the past has been such a disturbing factor in the retail trade, is no longer a menace.

Less Than 600 New Routes for Next Fiscal Year.

The recent rapid increase in the extension of the service in the Southern States, notably in Georgia, North and South Carolina, Alabama and Texas, is highly significant. During the early years of this service Southern Senators and Congressmen discountenanced it on the ground that it was extravagant and paternalistic, but it is a suggestive fact that the majority of the bills for a rural parcel post presented last winter were brought forward by Southern Congressmen. It is perhaps more than a coincidence that the catalogue houses have shown an activity and enterprise in the extension of their business in the South that bear a close relation to governmental expenditures for the extension of the rural service.

Extension of R. F. D. Service in the Southern States.

THE PATTERSON-SARGENT COMPANY, Cleveland, Ohio, manufacturer of B. P. S. Paints, Varnishes, &c., is sending out notices announcing the establishment of a retail distributing store in connection with its offices and warehouse at 8-10 Jay street, New York City, where it will carry a full line of painters' supplies.

THE UNITED STATES CARTRIDGE COMPANY, Lowell, Mass., has issued a handsome advertising hanger in brilliant colors. The subject of the illustration is a mountain lion devouring its prey on the edge of a precipitous cliff.

Oklahoma Retail Hardware and Implement Dealers' Association.

THE fifth annual convention of the Oklahoma Retail Hardware and Implement Dealers' Association was held in Oklahoma City on July 14, 15 and 16, the scene of the deliberations being the Auditorium. L. T. Yount, vice-president of the Oklahoma City Hardware and Manufacturers' Club and local manager of the John Deere Plow Company, welcomed the visiting merchants to the city, the response for the association being made by Frederick Pfaff, Anadarko.

Convention Committees.

The following convention committees were appointed by the president:

NOMINATING.—O. A. Smith, Watonga; Will Brewington, Pawnee; C. W. Dutton.

LEGISLATIVE.—Will Brewington, Pawnee; Ben F. Ridge, W. J. Pettee.

RESOLUTIONS.—M. C. Hale, chairman, Tulsa; Frederick Pfaff, Anadarko; G. W. Turner.

Hardware Store Motto.

Announcement had been made in the printed programme that "The dealer who brings the best motto for a Hardware store will have his fare refunded." In response to this offer mottoes were called for by the president, but only one had been prepared, that by M. C. Hale, Tulsa, which read as follows:

Your Money's Worth With Every Purchase—Courtesy Thrown In.

Mr. Hale was declared to have won the prize, but it having been rumored that Mrs. Hale had written the motto, it was moved and carried that the check for the amount should be made payable to his wife.

Secretary Patterson's Report.

A detailed report of the work of the association since the last meeting was made by the energetic secretary, D. C. Patterson, Oklahoma City. In it reference was made to some of the matters discussed at the last annual meeting of the National Federation, and the important and successful part taken by Hardware interests in opposing parcel post before the Trans-Mississippi Commercial Congress, which was held in Muskogee in November. Mention was also made of a few complaints of trade abuses by manufacturers and jobbers. Mr. Patterson concluded his report with a courteous request that members pay more attention to letters sent out from the secretary's office, so that his time and the funds of the association shall not be wasted.

State Legislation Benefits.

William Murdock, Ralston, president of the association, delivered a forcible address on the subject of "Legislation and Its Benefits to the Retail Hardware and Implement Trade," in which he pointed out the necessity of merchants taking an active interest in this matter and seeing to it that only competent men having the welfare of the entire people at heart are sent to represent them at the State capitol. Mr. Murdock said:

If I had been consulted relative to the subject that should be my portion of this work, I would never have consented to address this convention upon a subject of this kind. It is true that I have had some little experience with the work of a legislature, but while that work was pleasant, yet it is not of a kind that we like to discuss outside of legislative halls. We are rather loath to enter upon these discussions, particularly upon an occasion of this character, because we are too apt to discuss these things from a party standpoint and this is not always best, but I want to say to the members of this association and to the commercial interests of the State of Oklahoma at large that we made strenuous efforts during the 160 days of the first session of the Oklahoma Legislature to enact laws that in their very nature would be of such a character as would give to the retail trade of Oklahoma the benefit of the protection that we know they need. Yet, I am frank to say that the commercial interests of Oklahoma have never yet recognized the need of holding up the hands of their representatives as they should.

The Commercial Bodies Themselves Are Largely Responsible

for the unsatisfactory condition of legislation. I have weighed this matter and believe I have studied it from every viewpoint, and I now make the assertion that the commercial interests can control, if they will, the laws that go upon the statute book for your use and mine. Why do I say this? Because the interests of the farming class and of the commercial class of Oklahoma are so closely identified that there is no dividing point to be found. That being true, it is your duty to help elect men to office that know the necessity for sane legislation. But I have found it always true that the men who are engaged in mercantile life, when approached upon a subject of this kind, say, "Oh, I haven't the time to give to this matter. My time is too valuable. Let somebody else attend to it." What is the result? Simply this: That men who are incompetent, without experience, have announced themselves for office, and you have walked like sheep to the ballot box and have given them the power to control, not alone the commercial interests, but the combined interests of all. The time is coming when the commercial interests of these United States must awaken and go forward and occupy the position that belongs to them.

Oklahoma's Foundation.

We have just come into the Union, as it were, and have had to build from the foundation, and the foundation is not yet finished. The structure that shall rest upon this foundation is for you to decide whether it shall be a finished one or not. You ask the Legislature, after the men are elected, to grant you relief in ways that you say are necessary for your interests, but then it is too late. The time for preparation and for the consummation of your wishes is before you have placed your ballot in the ballot box. That is the day of your power and the day you can make the world feel your power the most. If this is done and you discharge your duty as citizens of Oklahoma, then will Oklahoma take such an advanced position as will forever be a cause for pride and satisfaction.

A Rugged Citizenship.

We have the ability in Oklahoma. I say to you that the citizenship of Oklahoma is composed of some of the best elements of the older States. The man who is hunting ease never goes to the frontier. Why? Because he does not want to meet the hardships that he knows confront him there. But with such a citizenship as we have I say to you that if you and I measure up to the full stature of manhood there will be no need hereafter for the people to make such criticisms as they have in the past. Care should be taken as to the dispatches and news sent broadcast over the land. They are up to you to control. With the vast resources with which God has blessed us, resources that wait development, every citizen should constitute himself a committee of one to let the outside world know our true rights and position.

Every Member's Duty.

I hope every member of this association will recognize that he has a duty which he must perform, a duty which he will discharge in such a way that he can have the consciousness of work well done. Let us see to it that in the election of men to office in Oklahoma they shall be men; let us see to it that they are men true and tried, men of experience and ability and wide in their range of knowledge, so that Oklahoma shall stand forever as a type of the class that the United States so much desires in her citizenship.

Trade Journals and the Trade.

A carefully prepared address on the subject of "The Advantages Derived from Reading Trade Papers," was delivered by Frederick Pfaff, Anadarko, from which we make the following extracts:

The trade journal has for its mission the dissemination of news which is of special interest to those who are interested in some particular line of business. The remarks which I shall make are supposed to have direct bearing on the Hardware and Implement business.

The benefits derived from reading these journals depends a great deal upon the reader. As you are all aware, many people will read through an article and then not be able to tell what they have read. With this class reading is only a pastime. On the other hand, there are those who, after reading an article, can tell you of every suggestion contained in it, and if there is anything which looks good to them they will see how it will work in connection with

their business. With this class reading is a source of enlightenment.

Influence in Parcel Post Legislation.

We will suppose that we have before us one of the leading journals. The first news we come to is the latest news concerning the Parcel Post bill. In this connection I will say that if it were not for the trade journals we would only secure the facts bearing on one side of the parcel post matter, and that would be in favor of the proposition, as the news we would receive through the regular channels would be playing for political effect. There is a popular feeling among politicians that the way for them to be successful is to make grand stand plays to the farmers for their votes, and that they will be able to call on the business man and fix his vote all O. K.

The recent defeat of the Parcel Post bill is due mainly to the influence of the trade journals. Had it not been for their influence the bill would have passed without any serious objection, and the large mail order houses would have secured another chunk of business which rightfully belongs to the home dealer.

Show Window Arrangement.

Looking a little further, we find the illustration of a show window. A little study shows us that it contains a great deal of merit and that our clerks could easily reproduce it. Let me say in this connection that there is no more effective way of bringing your wares before the buying public than through your show windows. If you are not original enough to get up an interesting window, you will be able to find some winners in almost any of the trade journals. Many of the suggestions in this line are worth several times the price of a year's subscription.

Retailer's Advertising.

Turning over a page we find that the adman connected with the journal is taking a few falls out of some fellow's ad. Don't fail to digest this part of the journal, as a large percentage of the advertising done by the local dealers is very faulty, and a little careful study of suggestions made by the adman will well repay you.

The next article is on the meeting of catalogue house competition. In this connection, as in the parcel post proposition, we have to depend on the trade journal for our information. While I do not agree with many of the propositions presented, there is much valuable information to be gained by reading all the articles on this subject.

On another page we find the proceedings of a dealers' convention which has been held somewhere. The trade journal is the only medium by which we are able to find a detailed discussion of their proceedings.

New Goods and Quotations.

In various places through the journal we see illustrations and descriptions of new articles which have just been placed on the market. It may be that some of those articles are in line with something we have been wanting and did not know where to secure them.

In many of the journals we find a list of prices of all staples. These change with each issue and are as nearly reliable as can be made. The journals often contain suggestions as to the prospects of an increase or decrease in the price of some commodity. Such information is often of considerable value to us.

Another subject we find discussed is that of the legal rights of the dealer. Many suggestions in this line are very timely and of considerable worth to the reader.

Other Topics of Interest and Value.

Then there are many valuable suggestions as to the best way to get up and conduct special sales, abuses of the warranty on Implements, Buggies, Wagons, &c. Advice is given as to the mistakes made by salesmen, and suggestions of how to increase our own ability and the ability of our clerks as salesmen. Remedies are given for price cutting, and hints of the most attractive way to arrange the interior of our stores.

Other articles of interest are found on the best way to collect bad debts, special forms of cards and duns used in making collections, &c.

There are various other articles of interest which may be read with profit. In fact, nothing is lost if you begin with the front cover, read all the ads., and finish, without missing a page, by reading the ads. on the back of the cover.

Considerable discussion followed the reading of this paper, in which a number of those present took occasion to refer to the importance of keeping abreast of the times, and that this could best be done through the medium of journals devoted to the trade.

Mels S. Darling's Address.

A notable address was that made by Mels S. Darling, Oklahoma City, in which he discussed at considerable length, "The Utter Disregard for Commercial Economics by Commercial Parasites," his remarks having special reference to the operations of the catalogue and mail order houses. Mr. Darling said that this was called an age of commercialism, but he declared this was true of every age. Commercialism was directly responsible for all the great discoveries in science; for all the great works of art; for all the marvelous creations in music. Shakespeare never would have given us those masterpieces had it not been for his own need of the financial return they would bring him. But commercialism was both destructive and constructive. The proper control of wealth was the problem confronting the people of to-day. Commercialism properly controlled meant happiness and democratic socialism.

Mr. Darling went on to show by illustration that the downfall of all the great nations of history was caused by the concentration of wealth. In spite of all he said the little man cannot be eliminated entirely, but his business can be crippled and his usefulness curtailed, and this was done by patronizing the mail order houses, the sales of the small merchant being thus lessened to such an extent that his business was cramped and his power in the community as a factor in its development was largely destroyed. He continued:

Take the village of Prosperity—Prosperity, Okla. It is the noon hour. The scene lies at the boarding house. The people are congregating for dinner. Here comes Mrs. Wilkins, the village milliner. She takes from her pocket a little purse and says to Mrs. Blank, who runs the boarding house, "Here is the $8 I owe you." And Mrs. Blank turns to the carpenter and says, "Here, Mr. Jones, is the money for that work you did for me last week." And the carpenter takes it and hands it to the doctor, who has just brought his boy through a bad case of typhoid. The doctor thanks him, and on his way home stops at the blacksmith's and pays his bill there, handing him the $8. And the blacksmith goes home at night and says, "Here, wife, is the money for the children's hats." And so you see it all goes back to Mrs. Wilkins, but what a lot of good it has done and how many debts it has settled since she paid it that day to the landlady at the boarding house. But where would it have been if Mrs. Wilkins had sent it to ———, Chicago?

Mr. Darling then pictured the difference in the citizenship that was produced in a city and the citizenship that was developed in the country or in a good sized town. He showed how democratic life was in a small place, how the children of the rich and poor played together, attended the same school and grew up with the same interests at heart. He showed that the catalogue house by cutting out the traveling man and the small merchant was destructive to the best interests of the rural communities and towns. Mr. Darling concluded his very interesting and suggestive address by emphasizing the interdependency of interests that is characteristic of every village and hamlet of the land.

Hardware Exhibits and the Retail Merchant.

A suggestive paper on the subject of "Convention Exhibits and Their Benefits to the Retail Dealer" was read by M. Scott, Hastings. Mr. Scott, who regards displays of this sort as of great educational value, spoke in part as follows:

In my judgment Hardware exhibits are the most important feature of these conventions. True, many interesting questions come up for discussion, but the exhibit is the university of the retail dealer. Comparison is the law by which we arrive at our definite conclusion. There is little in the world that is absolute. The homeliest woman, if not too homely, becomes beautiful in the eyes of the man to whom all other feminine society is denied; and the poorest tool, implement or machine is appreciated as a thing of value until placed in contrasted relation with one of improved type. There is no perfection in art. The primeval man who sharpened a stone by the tedious process of rubbing it upon one of its kind and bound it to the end of a stick by the bark thereon, to be used as an implement of war, looked upon his achievement with much the same satisfaction as did the inventor of the locomotive engine. Each had accomplished something great for his day. Each looked upon his product, no doubt, as the perfection of art; and yet the possibilities of subsequent invention and improvement were as great in the second case as in the first, and the wheels of progress moved on.

Should Keep Informed.

In the great Southwest the interest of the retail Hardware and Implement dealer centers in those things designed for household and agricultural use, and it is expected, yes, demanded of him that he keep thoroughly informed as to the

important changes and improvements in those lines. How, then, is the dealer to gain a comprehensive idea of what is best to be placed upon his shelves, his floor or his yard? This problem has been solved for him by the convention exhibit. Here the manufactured products of the world have been assembled for the general good. I say "general good" because the manufacturer is benefited by having this opportunity of showing his products to men whose business is to distribute them to the consumer. The retailer is benefited by having this opportunity to study side by side the various makes offered him, while the consumer is benefited by this prompt method of bringing within his reach the best that genius has produced. And permit me to make this statement: The fact that the manufacturer is willing to so place his goods in juxtaposition with those of a competitor is the best evidence of confidence in his line. And the zeal manifested by our manufacturers and wholesalers in thus placing their respective lines for study by the retail man, while prompted by business reasons, is in effect most unselfish.

How to Go About It.

Now let us discuss more particularly the benefits that the retail Hardwareman gets from these exhibits, and how he is to go about obtaining the greatest degree of assistance to his business from this subject. In other words, let us make the application. The climatic conditions, the soil and the nature of the crops determine to a very great degree the kind of implements required for a given locality, and it is with implements that we wish to deal now. The successful retail implement dealer will make a careful study of these conditions, together with the tools now in use, note carefully the results, being especially observant as to points of marked excellence or defect. He will freely discuss these points with his customer and encourage him to suggest remedies. Great care must be exercised, however, that the user does not exaggerate the points of distinction. Many times the inexperienced retailer is induced to make injudicious purchases by the overzealous recommendations of a favorite customer. In some instances it will be found that the style of Plow, Planter or Cultivator in use in a given trade territory is in no particular suited to the demands, and in a case of this kind he should have the courage to make the radical changes required to properly equip his customers.

A sufficient consideration of local requirements having been taken, the next step is to remedy—the time, now, and the place, the convention exhibit. Endeavor there to find the implement that overcomes the defects of the objectionable one, if possible losing none of the virtues which the discarded one may possess. The aggregate of excellence is the end sought, and much time and thought must be expended before one can safely assure himself of what is best.

Look Out for "Talking Points."

Again, we have what are called "talking points," by which is understood features that are not really material as regards utility, but simply used to distinguish a line from others of similar type. The inexperienced retail man must beware of these "talking points," for the chances are that the manufacturers' salesman is a better 'alker than he, and the possibilities are that your competitor is also, in which case it is much better to retain the stable features and let them speak for themselves. Besides, this "talking point" method is open to question as to its honesty.

Over-Improvement.

Another point to be watched is overimprovement. I can recall to mind more than one excellent implement which has been materially weakened by changes that were induced by the desire of the manufacturer to keep in advance of those who were copying his expiring patents. In fact, I fully believe such changes have been made when it was known to the builder himself that the change would cripple the utility of the tool.

One of the Difficulties Encountered

by the retailer in the selection of a line of implements is that no one make carries the best in all the various kinds of machines. It thus leaves the buyer the alternative of taking a complete line, the good with the bad, for car shipment, or to choose from the various lines and ship by local freight. In this time of excessive wholesale prices, and consequent narrow retail margins, the former is the only practical plan.

Let us sum up by saying that the convention exhibit is a means by which the consumer is brought into communication with the manufacturer through the medium of the retailer. It offers the last named not only an opportunity of profit by the selection and sale of the most advanced type of goods, but being in close touch with what has been produced upon the one side and with what is demanded upon the other, he has unlimited opportunities himself in the field of invention.

A Striking Poster.

A poster, the subject matter of which was prepared by Mrs. M. S. Darling, was distributed at the convention and has been given a wide circulation. The poster is headed "Thoughts of Which to Think," and among the sentiments are the following:

One of the nation's greatest dangers is concentration of wealth and its power.

One of the great concentrators is the big catalogue house which boasts of its greatness.

The mail order houses seek to build a few great centers: A few centers mean fewer towns and smaller ones. This means reduced taxable wealth and depleted population, impoverished small communities and congested cities.

The home merchants don't expend millions in advertising and for big picture books, but they do pay taxes and give employment to home people.

The catalogue house shows you a picture, takes your money and sends the goods later. Most men have passed the age when they trade jack knives "sight unseen."

When in a hurry do people send away for goods? Can the merchant live on hurry-up business? It will worry him to do it.

If half the merchants in this town quit business what will real estate and the farm be worth? What will bank deposits be?

You don't know what your home merchant can do and will do until you talk to him. If you want cheap stuff, he can get it for you. You can buy a piano for $150 and one for $3000, and they are both cheap for the price. You can't get something for nothing—you usually pay what a thing is worth; not much more or less.

Election of Officers.

The following officers were chosen for the ensuing year:

PRESIDENT, Ben. P. Ridge, Duncan.
VICE-PRESIDENT, M. C. Hale, Tulsa.
SECRETARY-TREASURER, D. C. Patterson, Oklahoma City.
DIRECTORS: M. Scott, Hastings, and J. M. Johnston, Waurika.

Mr. Murdock, the retiring president, was selected to represent the association at the annual meeting of the National Federation of Retail Implement and Vehicle Dealers' Associations, and Mr. Patterson, the secretary, to represent the organization at the annual gathering of the National Retail Hardware Association. O. A. Smith, Watonga, and Frederick Pfaff, Anadarko, were elected alternates.

Resolutions.

The Committee on Resolutions recommended the following, which were adopted:

We extend a vote of thanks to the Oklahoma City Hardware and Manufacturers' Club, to the retail dealers, and to all other organizations and citizens of Oklahoma City, for the splendid hospitality extended to us.

We also extend a vote of thanks to Mels S. Darling for his splendid address.

We extend to the traveling men our thanks for the interest they have taken in our organization and to those who have become members of the same.

We extend thanks to the many exhibitors for their fine displays and the assistance rendered our association.

We extend thanks to our worthy president, Mr. Murdock, and to Mr. Patterson, our secretary, for their untiring efforts in behalf of the organization.

We believe that it is the duty of the retailers of Oklahoma to do everything in their power to send men to represent us in our Legislature who have had business experience.

And we further recommend that our representatives in the Legislature work for fewer and better laws.

We also recommend that our Legislative Committee do all in their power to secure the enactment of laws which will protect the retail dealer from the range, buggy and kindred peddler.

It is the belief of your committee that the retailers are not taking enough interest in our organization. Its success depends upon the hearty co-operation of all the dealers in our State.

We further wish to recommend that as our retiring president, Mr. Murdock, is retiring also from the Hardware business, that he be made an honorary member of our association permanently.

Resolved, That the dealers over the State take up the matter of writing articles for the various trade papers, and thereby carry on a discussion of the numerous questions that are of vital concern to their welfare.

Boosting Oklahoma.

"Our Part in Boosting Oklahoma and Bringing in New Settlers" was the topic of a paper read by M. C. Hale, Tulsa. Mr. Hale said that while this subject had no bearing on the association as an organization, it had a great deal to do with the future prosperity of the merchants of the State. Much of the prospective welfare of Oklahoma depended on getting people to locate there, to get the rich lands under cultivation and to make use of the great natural resources of the State. Realizing this, Tulsa had tried to do her part by advertising Tulsa and Oklahoma in the North and East, the natural source of emigration. Mr. Hale did not attempt to tell all that the

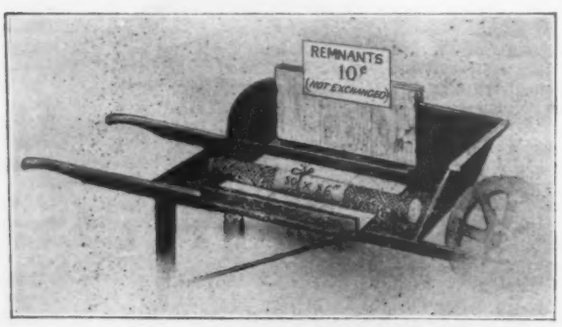
Commercial Club of Tulsa had done along these lines, but described the form of advertising that had been found the most profitable and effective—namely, that of sending special trains through the manufacturing centers of the North and East. The first train was sent out in 1905 and covered a few of the Middle Western States. The results of this enterprise were so gratifying that in April last a special train, composed of 10 cars and carrying more than 100 representative business men of Tulsa, together with a band of 23 pieces, "once more pierced the manufacturing centers of the East." The train carried a complete printing outfit and five men were constantly employed getting out the *Daily Courier*, which told in detail of the great natural resources of Oklahoma. He said that the free advertising of Oklahoma secured by this train could not have been purchased at any price. The secretary of the Commercial Club had received 500 clippings from well-known papers all over the country in which Tulsa and the State in which it was located were mentioned. The town, he continued, had already felt the result of this advertising, the railroad people reporting that the travel into the place since the return of the train has increased more than 20 per cent.

Hardware Exhibits.

Only one business session was held each day, which allowed the merchants considerable time to visit manufacturers and jobbers in the city and also to inspect the numerous exhibits of Hardware and related lines. More than 40 houses had reserved space in the body of the convention hall and in tents just back of the building, and much interest was manifested in the displays. Among the exhibitors were the following: E. C. Atkins & Co., Indianapolis, Ind.; Peters Cartridge Company, Cincinnati, Ohio; Union Metallic Cartridge Company, Bridgeport, Conn.; Chandler Pump Company, Chandler, Iowa; Vermont Farm Machine Company, Bellows Falls, Vt.; De Laval Separator Company, Poughkeepsie, N. Y., and Standard Varnish Works, New York City.

Odds and Ends of Wire Cloth.

ODDS and ends may often be turned into good money if presented to the public in some ingenious way. Nelson W. Haskell, a wideawake Hardwareman of Lynn, Mass., writes us that he has always been bothered by odds and ends of Wire Cloth and Netting. He, of course, saved them and tried to work them off when the right size and length were called for, but they were always a nuisance. A few weeks ago there was a pile of them lying in the cellar, a sad collection. Struck by a happy



Selling Odds and Ends of Wire Cloth.

thought he decided to wrap them all up, mark them at low prices, and see if they would not sell themselves. That is just what happened. A rack was made to fit into a wheelbarrow with one side taken out, as shown in the illustration. It took 5 min. to make the rack and ½ hr. to do up the odd pieces in bundles, with a piece of 12-in. paper and a little twine. They were marked as indicated, a dozen pieces at a time being piled up in the wheelbarrow at the doorway. The selling was no trouble, as people just came in and put 10 cents on the counter, took their bundle and walked away happy, while Mr. Haskell made $10 by the bright idea.

H. D. Bachtell has opened a new Hardware, Stove, Tinware and Sporting Goods store at Waterloo, Iowa.

Price-Lists, Circulars, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c, for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

J. FINLEY SMITH & SON, 117 Chambers street, New York: Illustrated and revised price-list, under date July 1, relating to Brushes and Dusters in great variety and covering a wide range of uses.

MILWAUKEE DUSTLESS BRUSH COMPANY: A catalogue describing the "Dustless" brush, printed in French for the use of the company's French agent, P. Geoffroy, in France and Algeria.

EAGLE COOPERAGE WORKS, Circleville, Ohio: Illustrated booklet relating to the Eagle Mop Wringer and Bucket.

ROSELAND CAN & SPECIALTY COMPANY, Rockford, Ill.: Illustrated catalogue of Cans and Tanks for various uses, Sifters, Strainers, Flue Stops, and other tin and sheet iron goods.

ELLER MFG. COMPANY, Canton, Ohio: Special illustrated catalogue of Roofing, Siding, Conductor Pipe, Elbows, Cut-offs, Hangers, Strainers, &c. The catalogue also refers to Cornices, Skylights, Crestings, Finials, Vanes, ornamental work and metal ceilings.

ANDREWS WIRE & IRON WORKS, Rockford, Ill.: Catalogue No. 27, relating to specialties, including Vrooman Sink Strainers, Higgins Flue Stops, Androck Bread Toaster, Androck and Ideal Carpet Beaters.

INVINCIBLE GRAIN CLEANER COMPANY, Silver Creek, N. Y.: Catalogue No. 15, relating to Grain Cleaning Machinery of all kinds; also Bran, Feed, Flour, Cement and Lime Packers, Separators, &c.

KNAPP & SPENCER COMPANY, Sioux City, Iowa: Tenth edition of insert pages for its loose leaf general catalogue.

ALLWIN ICELESS REFRIGERATOR COMPANY, Galesburg, Ill.: Catalogue illustrating and describing an Iceless Refrigerator.

Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM THE KINGMAN HARDWARE COMPANY, Hudson, N. Y., which has been incorporated with a capital of $10,000 to take over the business of R. I. Kingman & Co., handling Shelf Hardware, Stoves, Tinware, Paints, &c., and doing a heating and roofing business.

FROM POPP & FORBES HARDWARE COMPANY, which has opened a Hardware, Stove, Tinware and Sporting Goods store at Waterloo, Iowa.

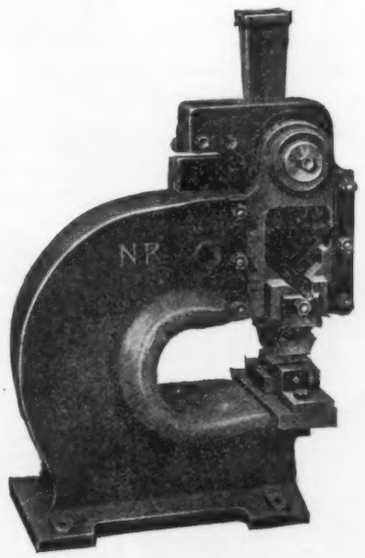
FROM A. B. HENDRICKSON, Ridgeway, Wis., who has bought and remodeled a building into which he has recently moved his Hardware, Stove and Tinware business.

FROM GUTHRIE, BRADLEY & JONES, Sweetwater, Tenn., who are about to add Plumbing Supplies and accessories to their stock of Hardware, Stoves, Implements and Kindred lines.

S. & S. Combined Punch and Shear.

Schuchardt & Schütte, 136 Liberty street, New York, have put out the S. & S. Punch and Shear, as shown. It is made entirely of forged and cast steel, the saddle is adjustable, and there are two punch sockets so that, by changing position, channel and T iron can be punched close to the web. The cutting capacity for plates and flat bars is as great as 13-32 in., round bars to 25-32 in., squares to 23-32 in. Angles up to 2 x ¼ in. dimensions,

Ts 1 25-32 x 3-16 in. dimensions, and holes may be punched up to ⅝ in. diameters. The body or frame is 3 in. wide at the top, 26 in. high above the floor, and 21 in. from front to back, on a base 8 x 17 in. The lever bar of forged steel, not illustrated, is 77 in. long from shaft center, and is seated in the square socket, where it is keyed to position. The bottom die plate has an ad-



S. & S. Punch and Shear.

justability of 1 in. to facilitate the punching of holes close to the web of angle iron. The frame throat is 10 in. deep and 5¾ in. high, capable of accommodating I beam flanges up to 5¾ in. in punching processes. The upper knives for cutting flats have a shearing length of 3½ in., and the knives can be readily removed and replaced as occasion requires. There is a group of 3 round holes for the insertion of rods to be cut, which have a capacity up to 25-32 in. The tool can be sent with or without a sliding gauge in the throat, not shown in the illustration. The weight of the device complete is nearly 300 lb.

Disston Keyhole Saw and Pad No. 95.

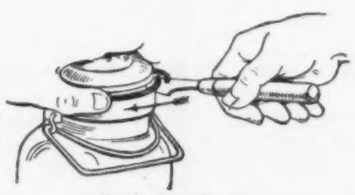
Henry Disston & Sons, Philadelphia, Pa., have added to their line the keyhole saw here illustrated. The blade is 10 in. long, ground thin back, and is firmly held in place by a steel grip inside the handle, tightened by a

Disston Keyhole Saw and Pad No. 95.

thumb screw, which is nickel plated. The handle, which is of hard wood, polished, with nickel plated ferrule, is slotted clear through, permitting the adjustment of the blade, according to the length of the cutting edge required.

Fruit Jar Opener.

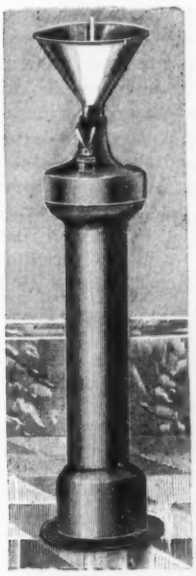
The Perfecto Mfg. Company, 21 Cherry street, Towanda, Pa., is putting on the market the device for



Fruit Jar Opener.

opening fruit jars shown in the accompanying illustration. It consists of a wooden handle with wedge shaped blade, to which is riveted a wire ring. The latter is so attached that when the ring is placed over the top of a fruit jar and the blade is pressed in by the rubber band between cover and jar, a pull of the handle exerts a powerful leverage, which starts the cover with ease. It is urged in favor of this opener that it prevents wounding hands, breaking jars and bending knife points, and that it does not injure the rubber bands. Two dozen are packed in a box and 2 gross in a case, which weighs 40 lb.

Hyde Sanitary Drinking Fountain.



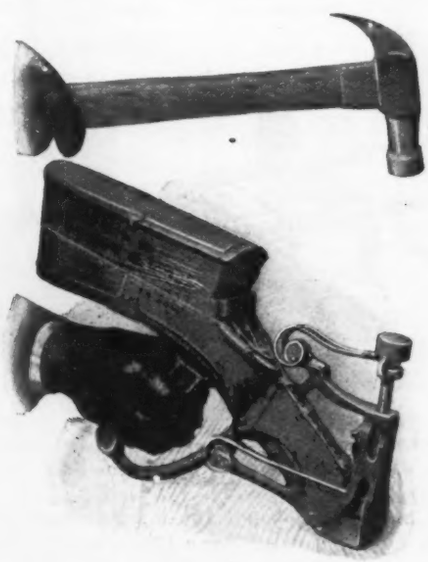
Hyde Sanitary Drinking Fountain.

The G. F. Barron Cooler Company, Rochester, N. Y., is the manufacturer of the Hyde sanitary drinking fountain shown in the accompanying illustration. It is so constructed that the lips cannot be placed upon the source of supply, thus preventing contamination from previous drinkers. In order to get a drink it is necessary to press together the rabbit ear faucet, which causes the water to be thrown up in a jet 3 or 4 in. above the bowl. Then the lips are placed over the jet for drinking. When the faucet is let go the water stops. The company states that the fountains are being used with satisfaction in schools and other public places in a number of cities.

WM. GEACH, senior member of the firm of Wm. Geach & Son, Granville, Ohio, died July 2, at the age of 78. He had been active in the Hardware business at Granville for over a quarter of a century.

Pearson's Improved Nailer.

The Pearson Mfg. Company, Robbinsdale, Minn., is manufacturing the improved Pearson's nailer shown in operation herewith. The frame is made of malleable iron, and the top spring of steel wire. The box or hopper in which the nails are held is made of galvanized iron



Nailing Machine in Use.

instead of tin, which, it is explained, makes the machine lighter and stronger. The bottom is put in to a crease or bead inside of the box so that it cannot get loose. The machine is especially useful in shingling, and can be used on a roof of any pitch, as well as on a level surface. With it a workman avoids pounding his fingers and holding dirty nails in his mouth.

Universal Pot Cover and Anti-Scorcher.

The kitchen utensils herewith illustrated are manufactured by the Beaver Mfg. Company, Beaver, Pa. They

Fig. 1.—Pot Cover.

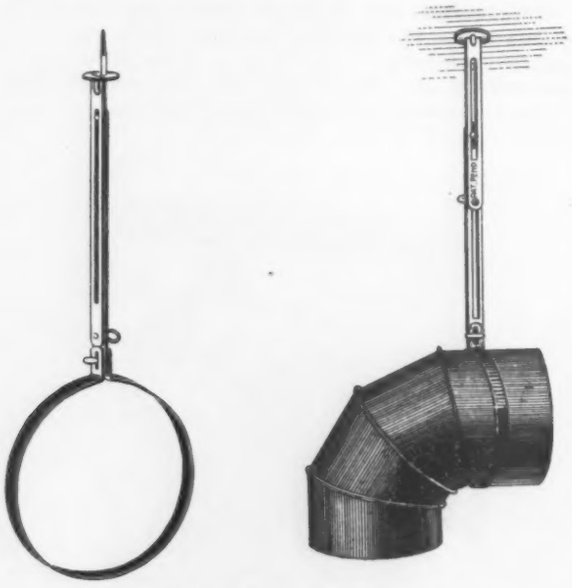
Fig. 2.—Anti-Scorcher.

are made of heavy tin and are of good workmanship. The merits of the cover, as pointed out by the manufacturer, are that it will fit from 8 to 11 in. pots, that its large inner space prevents boiling over, and that when it is lifted from the pot the condensation does not drip, but remains within the cone part of the cover. The anti-scorcher prevents food touching the bottom of the cooking utensil, and thus, it is claimed, eliminates all danger of scorching. Pot covers are packed 4 doz. to the crate and anti-scorchers 1 gross to the crate.

Fig. 3.—Pot Fitted with Cover and Anti-Scorcher.

The Gem Stove Pipe Hanger.

The accompanying illustrations show a stove pipe hanger and its application. The device is made in two lengths: No. 1 adjusting from 9 to 14 in., and No. 2 adjusting from 14 to 19 in. A screw at the upper end of the hanger holds it firmly to the ceiling. The arm of the hanger is adjustable, and there is a thumb screw which holds the pipe in place after it has been fixed at the



The Gem Stove Pipe Hanger.

desired hight. The band which goes around the pipe elbow is also held firmly by a thumb screw which prevents the pipe getting loose or falling. The band is made to fit 4, 5, 6 or 7 in. pipe. The hanger is made of steel, neatly japanned, and is being put on the market by the Hale Specialty Company, 544 Unity Building, Chicago, Ill.

Lindström's Swedish Side Cutting Pliers.

Schuchardt & Schütte, 136 Liberty street, New York, are putting on the market Lindström's diagonal and side cutting Swedish pliers, No. 805 L, made in seven sizes, 3 to 6 in., inclusive, by half inches. The pliers are made of the highest quality of Swedish tool steel, are finely polished throughout, and are offered as thoroughly high-grade goods.

Clark's New Casters.

The Casters shown herewith are put on the market by the George P. Clark Company, Windsor Locks, Conn. The swivel stem caster illustrated in Fig. 1 is strong and durable, and will adapt itself to many places where the regular swivel caster cannot be used. The socket caster shown in Fig. 2 is fitted with hardened steel balls, making it to swivel easily, and is adapted for use on table legs in manufacturing establishments, such as paper, cotton,

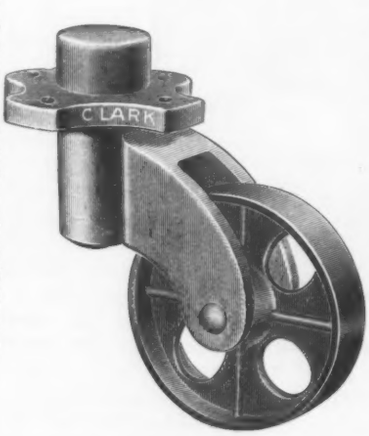


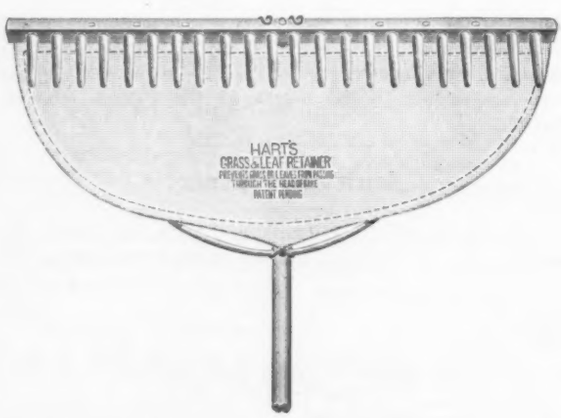
Fig. 1.—Swivel Stem Plate Caster No. 72.

Fig. 2.—Socket Casters with Rubber Tired Wheels.

woolen mills, &c., where heavy tables are used and subjected to heavy loads. The caster is not intended for use on tables in private residences owing to its heavy construction. Referring to its No. 60 anti-friction casters the company emphasizes the point that hardened steel balls are used, in distinction to small round steel disks. The two casters illustrated, as well as the No. 60, are fitted either with the company's rubber tired wheels or with plain iron wheels.

Hart's Lawn Rake Grass Retainer.

The Hart Mfg. Company, Unionville, Conn., is putting on the market the device shown in the accompanying illustration, intended for use in connection with a lawn rake to prevent grass and leaves from passing through the head. It consists of a frame of wire with cloth sewed



Hart's Grass Retainer on Rake.

on to it. Attached to the frame are wire snaps which will snap on to a wooden rake head and hold the device in place. The company claims that much time may be saved by the use of its retainer in clearing lawns of cut grass or leaves.

The Nicholls Automatic Stropper.

The accompanying illustrations relate to an automatic stropping machine adapted for use with Gillette safety razor blades only, and offered by W. H. Nicholls & Co., 69

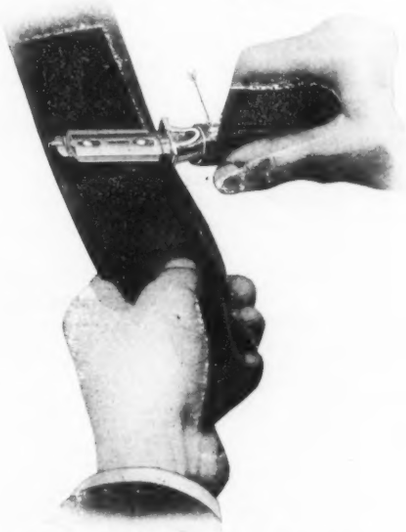


Fig. 1.—The Nicholls Automatic Stropper.

Pearl street, Boston, Mass. In Fig. 1 is shown the position of the machine on the strop while Fig. 2 indicates how the machine is held to release the blade. The blade

Fig. 2.—Removing Blade from Nicholls Stropper.

seat has two pins which are slotted on both sides near the top. The pins project up through the holes in the blade. When the cap is put on it scores by sliding along into the slots in the pins, thus acting as a key and holding the blade in place. This construction is shown in Fig. 2. In operation the machine, with the blade in position, is placed on the strop ready for the stroke which is given with a slight downward pressure. This brings the end of the handle in contact with the rocking cam, which when in motion imparts to the blade seat a simple rocking movement, throwing the blade against the strop. After a few strokes or so, back and forth, the machine is placed on the strop with the other side up, and the operation continued as before. The quick reverse of the machine from one side to the other is referred to by the manufacturers as an advantage peculiar only to this machine.

Imp Gasoline Blow Torch.

The Frank Mossberg Company, Attleboro, Mass., has added to its line the blow torch illustrated herewith. Although the device is especially convenient because of its small size, and sells at a low price, yet the company declares that it will do as much work as many larger torches. It is described as simple in construction and

Imp Gasoline Blow Torch.

operation, being entirely automatic. No pump or valve are required, the torch being started by the flame of a match applied to the corrugated neck. The corrugation, it is said, increases the heating surface to such an extent that the match easily generates gas enough for starting, after which the mixing tube renders further attention unnecessary. The torch weighs 3½ oz., and burns 2 hours on 4 oz. of gasoline. It is especially recommended for electricians, linemen, painters, repair men, automobilists, and men who do their own repairing.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	℔ gal	
Linseed, State and Western, raw		@42
City, Boiled		@46
City, Raw		@45
Raw, Calcutta, in bbls		@..
Lard, Prime, Winter		@69
Extra No. 1		@56
No. 1		@52
Cotton-seed, Crude, f.o.b. mill		@35
Summer Yellow, prime		@46
Summer White		@50
Yellow Winter		@49
Tallow, Acidless		@55
Menhaden, Brown, Strained		@..
Southern		@..
Light Strained		@..
Bleached Winter		@..
Ex. Bleached Winter		@..
Cocoanut, Ceylon	℔ lb	6⅝@ 6½
Cochin	℔ lb	7 @ 7⅛
Cod, Domestic, Prime		@44
Newfoundland		@45
Red, Elaine		@41
Saponified	℔ &	5¾@ 5⅞
Olive, Yellow		@69
Neatsfoot, Prime		@58
Palm, Lagos	℔ lb	5¾@ 6

Mineral Oils—

	℔ gal.	
Black, 29 gravity, 25@30 cold test		@13½
29 gravity, 15 cold test		@14
Summer		@13
Cylinder, light filtered		@21
Dark, filtered		@19
Paraffine, 903-907 sp. gravity		@15
903 sp. gravity		@14
883 sp. gravity		@11½
Red		@14

Miscellaneous—

Barytes:		
White, Foreign	℔ ton	$18.50@20.50
Amer., floated	℔ ton	18.00@20 00
Off color	℔ ton	13.00@16.50
Chalk, in bulk	℔ ton	3.00@ 3.40
China Clay, Imported	℔ ton	11.50@18.00
Cobalt, Oxide	℔ 100 lb	1.45@ 2.60
Whiting, Commercial	℔ 100 lb	.42@ .52
Gilders	℔ 100 lb	.55@ .60
Ex. Gilders	℔ 100 lb	.60@ .65

Putty, Commercial—℔ 100 lb

In bladders		$1.70 @1.80
In bbls. or tubs		1.20 @1.45
In 1 lb to 5 lb cans		2.65 @2.05
In 12½ to 50 lb cans		1.50 @1.90

Spirits Turpentine—℔ gal.

In Oil bbls	41 @41½
In machine bbls	41½@42

Glue—

	℔ lb	
Cabinet		@15
Common Bone		@ 9
Extra White		@24
Fish, liquid, 50 gal. bbls., per gallon		@1.20
Foot Stock, White		@14
Foot Stock, Brown		@11
German Common Hide		@12
German Hide		@18
French		@40
Irish		@16
Low Grade		@12
Medium White		@17

Gum Shellac—

	℔ lb	
Bleached, Commercial		@28
Bone Dry		@35
Button		@40
Diamond I		@48
Fine, Orange		@35
A. C. Garnet		@28
G. A. L.		@21
Kala Button		@19
D. C.		@49
Octagon B		@40
T. N.		@30
V. S. O.		@48

Colors in Oil—

	℔ lb	
Black, Lampblack		@14
Blue, Chinese		@16
Blue, Prussian		@36
Blue, Ultramarine		@16
Brown, Vandyke		@14
Green, Chrome		@16
Green, Paris		@24
Sienna, Raw		@15
Sienna, Burnt		@15
Umber, Raw		@14
Umber, Burnt		@14

White and Red, Lead &c.—

	℔ lb	
Lead, English white, in Oil		@10⅝
Lead, American White:		
Dry and in Oil, 100, 250 and 500 lb kegs		7
Dry and in Oil, 25 and 50 lb kegs		7¼
Dry and in Oil, 12½ lb kegs		7½
In Oil, 25 lb tin pails		7½
In Oil, 12½ lb tin pails		8
In Oil, 1, 2, 3 and 5 lb tin cans, ass't		9
Red Lead and Litharge:		
In 100 lb kegs		7
In 25 and 50 lb kegs		7¼
In 12½ lb kegs		7½
In lots of less than 500 lbs, ½¢ ℔ lb advance over above prices of White and Red Lead and Litharge.		

Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.

Zinc, Dry—

	℔ lb	
American, dry		5¼@ 5⅝
Red Seal (French process)		6¾@ 7
Green Seal		7¼@ 7½
German Red Seal (French process)		6½@ 6⅞
Green Seal		7⅛@ 7¼
White Seal		7⅝@ 8⅛
French, Red Seal		8¼@ 8⅜
Green Seal		10¼@10½

Dry Colors—

	℔ lb	
Black, Carbon		6½@10
Black Drop, American		3½@ 8
Black Drop, English		5 @15
Black, Ivory		16 @20
Lamp, commercial		4 @ 6
Blue, Celestial		4 @ 6
Blue, Chinese		31 @33
Blue, Prussian		29 @31
Blue, Ultramarine		3½@15
Brown, Spanish		½@ 1
Carmine, No. 40		$3.10@3.25
Green, Chrome, ordinary		3½@ 5
Green, Chrome, pure		17 @25
Ocher, American	℔ ton	$8.50@16.00
American Golden		2½@ 3¼
French		1¾@ 2
Foreign Golden		3 @ 4
Orange Mineral, English		10 @12
French		12¾@13
German		12 @13
American		9 @10
Red, Indian, English		4½@ 6
American		3 @ 3¼
Red, Turkey, English		4 @10
Red, Tuscan, English		7 @10
Red, Venetian, Amer.	℔ 100 lb	$0.50@1.25
English	℔ 100 lb	$1.15@1.60
Sienna, Italian, Burnt and Powdered		3 @ 9
Italian, Raw, Powdered		3 @ 7
American, Raw		1½@ 2
American Burnt and Pow'd.		1½@ 2
Talc, French	℔ ton	$18.00@25.00
American	℔ ton	15.00@25.00
Terra Alba, French	℔ 100 lb	.90@ 1.00
English	℔ 100 lb	.80@ 1.00
American	℔ 100 lb, No. 1	.75@ .80
American	℔ 100 lb, No. 2	.60@ .65
Umber, T'key, Bnt, & Pow.		2⅝@ 3
Turkey, Raw and Powdered		2⅝@ 3
Burnt, American		1½@ 2
Raw, American		1½@ 2
Yellow, Chrome, Pure		13¾@15
Vermilion, American Lead		7 @25
Quicksilver, bulk		65 @..
Quicksilver, bags		@66
English, Imported		65 @70
Chinese		$0.90@1.00

Current Hardware Prices

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs .....$2.00@$3.00

Anvils—American—

Eagle Anvils.....℔ lb @8½¢
Hay-Budden, Wrought.....9½@9¾¢
Trenton .....℔ lb 9½@9¾¢

Imported—

Swedish Solid Steel Sisco, Superior, ℔ lb.....10¢@10½¢
Peter Wright & Sons, ℔ lb. 84 to 349 lb. 11¢; 350 to 600 lb. 11½¢.

Anvil, Vice and Drill—

Millers Falls Co., $18.00.....15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Livingston Nail Co.....10%

Augers and Bits—

Com. Double Spur....75&10@80%
Jennings' Patn., Bright.65&10@70%
Black Lip or Blued...65@65&5%
Boring Mach. Augers.....70%
Car Bits, 12-in. twist.....40&10%
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's 35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Wright's Jennings' Bits.....50%

Bit Stock Drills—

See *Drills, Twist.*

Expansive Bits—

Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern.....66⅔&5%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's 60%

Gimlet Bits—

Per gro.
Common Dbl. Cut.....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75

Hollow Augers—

Bonney Pat., per doz..$5.50@6.00
Ames .....20&10%
Universal 20%

Ship Augers and Bits—

Ship Augers.....40&10@—%
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's 6%
Watrous' .....33⅓&7½%
Snell's 48%

Awl Hafts—See *Handles, Mechanics' Tool.*

Awls—

Brad Awls:
Handled .....gro. $2.75@3.00
Unhdld, Shldered...gro.63@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. 31@34¢
Unhdld, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

Single Bit, base weights: Per doz.
First Quality.....$4.75@5.00
Second Quality.....$4.25@4.50
Double Bit, base weights:
First Quality.....$7.00@7.50
Second Quality.....$6.50@6.75

Axle Grease—

See *Grease, Axle.*

Axles—

Iron or Steel.
Concord, Loose Collar...4¼@4¼¢
Concord, Solid Collar....4½&5 ¢
No. 1 Common, Loose...3½@4 ¢
No. 1½ Com., New Style.4¼@4¾¢
No. 2 Solid Collar.....4¼@4¾¢
Half Patent:
Nos. 7, 8, 11 and 12.....70%
Nos. 13 to 14.....70%
Nos. 15 to 18...70&10@70&10&5%
Nos. 19 to 22...70&10@70&10&5%

Boxes, Axles—

Common and Concord, not turned .....lb., 5@6¢
Common and Concord, turned, lb., 6@7¢
Half Patent.....lb., 9½@10¢

Bait—Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances—Sash—

Caldwell new list.....50&5%
Pullman .....50&5%

Spring—

Light Spring Balances..60@60&5%
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb. per lb., 2¼@2½¢

Towel—

No. 10 Ideal, Nickel Plate..℔ gro. $8.50

Beam, Scale—

Scale Beam's.....40%
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned $0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned $1.20
No. 10 Wire Tinned.....℔ doz. $1.50

Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd. $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

Bellows—

Blacksmith, Standard List:
Split Leather.....60&10@65%
Grain Leather.....50@50&10%

Hand—

Inch..	6	7	8	9	10
Doz..	$5.00	5.50	6.00	6.50	7.50

Molders—

Inch..	10	12	14	16
Doz..	$7.50	9.00	12.00	15.00

Net Prices.

Bells—Cow—

Wrought Cow Bells.....75%
Jersey .....75&10%
Texas Star.....30%

Door—

Home, R. & E. Mfg. Co.'s.....50&10%

Hand—

Polished, Brass.....60%@60&10%
White Metal.....60%@60&10%
Nickel Plated.....50&10%
Swiss .....50&10%
Cone's Globe Hand Bells.....33⅓@33⅓%

Miscellaneous—

Farm Bells.....lb., 2¼@2¼¢
Church and School....6%@60&10%

Belting—Leather—

Standard .....70&10@70&10&5%
Light .....75&10%
Cut Leather Lacing..60@60&10%
Leather Lacing Sides, per sq. ft. 20¢

Rubber—

Competition (Low Grade), 70&10@75%
Standard .....60&10@70%
Best Grades.....40@50%

Bench Stops—

See *Stops, Bench*

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters 20%

Bicycle Goods—

John S. Leng's Son & Co.'s 1907 list:
Chain, Parts, Spokes.....50%
Tubes 60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks—Tackle—

Common Wooden.....75@75&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior 30%
See also Machines, Hoisting.

Boards, Stove—

Paper and Wood Lined.....55%
Embossed 55%

Boards, Wash—

See *Washboards.*

Bobs, Plumb—

Keuffel & Esser Co.....33⅓%

Bolts Carriage, Machine, &c.—

Common Carriage (cut thread):
⅜ x 6 and smaller..75&5@—%
Larger and longer.....70@—%
Phila. Eagle, $3.00 list...80@—%
Bolt Ends.....70@—%
Machine (Cut Thread):
⅜ x 4 and smaller..75&10@—%
Larger and longer.....70@—%

Door and Shutter—

Cast Iron Barrel, Japanned, Round Brass Knobs:

Inch	3	4	5	6	8
Per doz..	$0.30	.35	.45	.60	.80

Cast Iron Spring Foot, Jap'd:

Inch	6	8	10
Per doz.....	$1.20	1.50	2.25

Cast Iron Chain, Flat, Japanned:

Inch	6	8	10
Per doz.....	$1.00	1.40	1.65

Cast Iron Flat Shutter, Jap'd, Brass Knobs:

Inch	6	8	10
Per doz.....	$0.75	.95	1.25

Wrought Barrel Japanned, 80&10@80&10&5%
Barrel Bronzed.....60&10%
Spring .....70&10@70&10&10%
Shutter .....50&5@50&10&5%
Square Neck.....75@75&10%
Square .....70&10&10@80%
Ives' Patent Door.....55%
Ives' Wrought Metal.....45%

Expansion—

F. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....55&10%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

Plow and Stove—

Plow .....65&5@70%
Stove .....85@85&5%

Tire—

Common Iron.....80@80&5%
Norway Iron.....80@80&5%
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle 82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1881..82½%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Bung—

Borers Bung, Ring, with Handle:

Inch.....	1¼	1½	1¾	2
Per doz...	$4.80	5.60	6.40	8.00
Inch.....		2¼		2½
Per doz.....		$8.65		11.50

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection 40%
Seavey 45%

Braces—

Comman Ball, American....$1.50
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat..50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

Brackets—

Wrought Steel..75&10@75&10&10%
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....℔ doz. $1.50

Bright Wire Goods—

See *Wire and Wire Goods.*

Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

Buckets, Galvanized—

M'fr's list, price per gross.

Quart..	10	12	14	
Water, Reg...	26.85	29.50	33.50	10&7½&65&5%
Water, Hvy...	45.35	48.00	52.00	
Fire, Rd. Btm..	32.00	34.65	38.65	
Well	37.35	41.35	45.35	

Bull Rings—See *Rings, Bull.*

Butts—Brass—

Wrought, High List, Oct. 26,'06.55%
Cast Brass, Tiebout's.....40%

Cast Iron—

Fast Joint, Broad....40&10@50%
Fast Joint, Narrow...40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70@70&5
Parliament Butts.....70@70&5

Wrought Steel—

Bright.
Light Narrow, Light Reversible .....70&5%
Reversible and Broad..70&5%
Loose Joint, Narrow, Light Inside Blind, &c.....70%
Back Flaps, Table Chest..65%
Japanned.
Light Narrow, Loose Pin, 40&5%
Light Narrow, Ball Tip..60%
Broad .....40&5%
Steeple Tipped.....70%
Ball Tipped.....70%

Extra, 10@—

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.... 30
Hendryx Enameled..... 35%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong, per lb..... ½@1½¢
Sharp, 1 prong, per lb... 4½@5¢
Burke's, Blunt, 4@4¼¢; Sharp, 4½@5¼¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ₱ lb, 3.65¢; Sharp, 4.15¢

Can Openers—

See *Openers, Can.*

Caps, Percussion—

Eley's E. B.....52@55¢
G. D.....per M 34@35¢
F. L.....per M 40@42¢
G. E.....per M 48@50¢
Musket .....per M 62@63¢

Primers—

Berdan Primers, $2 per M.. 20&5%
Primer Shells and Bullets.. 15&10%
All other primers per M..$1.52@1.60

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

Blank Cartridges:
32 C. F., $5.50..... 10&5%
38 C. F., $7.00..... 10&5%
22 cal. Rim, $1.50..... 10&5%
32 cal. Rim, $2.75..... 10&5%
B. B. Caps, Con. Ball, Swgd..$190
B. B. Caps, Round Ball.....$1.40
Central Fire..... 25%
Target and Sporting Rifle.. 15&5%
Primed Shells and Bullets.. 15&10%
Rim Fire, Sporting..... 50%
Rim Fire, Military..... 15&5%

Casters—

Bed ..... 65&10@70%
Plate ..... 60&5@60&10%
Philadelphia ..... 70&11@75%
Acme, Ball Bearing..... 35%
Gem (Roller Bearing).....70&10&10&5
Steel Gem..... 50%
Standard Ball Bearing..... 45
Yale (Double Wheel) low list...40&10%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Proof Coil—

American Coil, Straight Link:

3-16	¼	*5-16*	⅜	*7-16*	½	⅝
$8.15	*5.55*	*4.60*	*3.95*	*3.75*	*3.65*	*3.55*

¾-⅞-1 1⅛ to 1¼ inch.
$3.45 3.55
In cask lots, deduct 25¢.
German Coil.....60@60&5%
German Pattern Coil:
6-0 to 1.....70&5@70&10%
2 and 3..60&10&10@60&10&10&5%
4, 5 and 6.....50&10@50&10&5%

Halter—

Halter Chains.....60&5@60&10%
German Pattern Halter Chains, list July 24, '07....60&10&5@70%
Covert Mfg. Co.:
Halter ..... 35&5%

Cow Ties—

See *Halters and Ties.*

Trace, Wagon, &c.-

Traces, Western Standard: 100 pr.
6½—6-3, Straight, with ring..$28.00
6½—6-2, Straight, with ring..$29.00
6½—8-2, Straight, with ring..$32.00
6½—10-2, Str'ght, with ring..$37.00
NOTE.—Add 2¢ per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2¢: No. 1, 3¢; No. 0, 4¢ to price of Straight Link.
Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron ..... 60&10&7½%
Brass 65%
Safety and Plumbers' Chain.. 75%
Gal. Pump Chain....lb., 4½@5%
Bridgeport Chain Co.:
Triumph Halter and Coil..35&2½@40%
Triumph Dog..... 50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40%
Niagara Dog Leads and Kennel Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain..... 70%
Universal Dbl.-Jointed Chain.....50%

Chain and Ribbon, Sash—

Oneida Community:
Steel Chain..... 60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered ..... 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft. ..... $2.00@$5.00
Sash Ribbon Attachments, per set..8¢

Chalk— (From Jobbers.)

Carpenters' Blue.....gro., 30¢
Carpenters' Red.....gro., 45¢
Carpenters' White.....gro., 30¢

Checks, Door—

Bardsley's 45%
Pullman, per gro..... $54.00
Russwin 33⅓%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools..... 55%
Youths' Chests, with Tools..... 40
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools 20%
Machinists' and Pipe Fitters' Chests, Empty..... 45%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

Chisels—

Socket Framing and Firmer

Standard List.....80&10@—%
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No, 15.....25&7½%
Swan's ..... 66⅔@70%
L. & I. J. White Co.....30@30&5%

Tanged—

Tanged Firmers.....30&5@35%
Buck Bros..... 30%
C. E. Jennings & Co. Nos, 191, 181..25%
L. & I. J. White Co..... 25&5%

Cold—

lb.
Cold Chisels, good quality.. 13@15¢
Cold Chisels, fair quality.. 11@12¢
Cold Chisels, ordinary.... 9@10¢

Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck..... 40
Beach Pat, each $8.00..... 35&5%
Empire 25
Blacksmiths' 25
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Patent Chucks:
Independent Lathe Chucks..... 35%
Universal, Reversible Jaws..... 35%
Combination, Reversible Jaws.... 35%
Drill Chucks, New Model, 25%; Standard, 45%; Skinner Pat. 25%; Positive Drive..... 40%
Planer Chucks..... 20
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21..... 35%
Scroll Combinations, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318..35%
Independent Steel, No. 64..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No, 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%
Whitaker Mfg. Co.:
National Drill..... 25%

Clamps—

Adjustable Hammers.....20@20&5%
Carriage Makers', P., S. & W. Co. ..... 50&10%
Besly, Parallel..... 33⅓&10%
Myers' Hay Rack..... 45%
Lineman's Swedish Neverturn..... 65%
Wood Workers' Hammers..... 40&10%
Saw Clamps, see Vises, Saw Filers'

Cleaners, Drain,

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

Sidewalk—

Star Socket, All Steel..₱ doz, $4.05 net
Star Shank, All Steel..₱ doz, $3.24 net
W. & C. Shank, All Steel, ₱ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30%
L. & I. J. White Co..... 30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each..$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Horse each,..... $6.75
Stewart's Patent Sheep Shearing Machine, each..... $12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

Clips, Axle—

Regular Styles, list July 1, '05, 80&80&10%

Cloth and Netting, wire

—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Plain Ribbs, Globe, Kerosene, Racking, Liquor, Bottling, &c 75%
Compression Ribbs..... 70%

Coffee Mills—

See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list..... 40%
Leather, Walter B. Stevens & Son's list 40%

Compasses, Dividers, &c.

Ordinary Goods.....70&10@75%

Conductor Pipe,—

L. C. L. to Dealers:

	Gal. Steel.	*Charcoal.*
Northeastern.	70&10%	50&10&7½%
Eastern.....	75%	50&10&7½%
Pittsburgh	..75&10&5%	60%
Central	....75&10%	60%
Northwestern.	75&7½%	60%
Western	....70&12½%	50&12½%
Tennessee	...70&10%	50&12½%
Southern	.... 70%	50&12½%
Southwestern.	70%	50&5%

Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

L. & G. Mfg. Co.:

Gal.	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3,90
Galvanized, Lined, side handles, Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15

White Enameled..... 10%
Agate Lined..... 10%

Coppers' Tools—

See *Tools, Coopers'.*

Coppers, Soldering—

Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢

Cord— Sash—

Braided, Drab.....lb. 35¢
Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.
Cable Laid Italian, lb., No. 18..37¢
Italian, lb., A, No. 18, 25¢; B, 22¢
Common India.....lb., 11@11½¢
Cotton Sash Cord, Tw'ted..18@20¢
Patent Russia.....lb....20¢
Cable Laid Russia.....lb...21¢
India Hemp, Br'd'd.....lb...21¢
India Hemp, Twisted...lb.13@14¢
Patent India, Twisted..lb...17¢
Pearl Braided, cotton, No. 6, ₱ lb. 27½¢; No. 7, 26½¢; Nos. 8 to 12, 26¢
Eddystone Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10..... ₱ lb 23¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ₱ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...₱ lb 40¢
Massachusetts, Drab...₱ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
} 15%
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

Wire, Picture—

Full Length.....90@—%
Short Length.....90&20@—%
Hendryx Standard Wire Picture Cord, o'd list, 85&10%
Turner & Stanton Co, Wire Picture Cord 90%

Cradles—

Grain 50%

Crayons—

White Round Crayons, Cases, 100 gro., $8.00, $8.50 and $9.00 according to grade.
Zelnicker's Lumber: ₱ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$1.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light $5.00

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden..... 50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor..... ₱ doz. $3.00
Wm. Rogers & Son..... ₱ doz, $2.50

Cutters— Glass—

H. H. Mayhew Co..... 40%
Red Devil..... 60%
B. Mfg. Co..... 40%
Woodward 50%

Meat and Food—

American 30%

Nos.	401	402	403	404	405	406	407
Each	$5	$7	$10	$12	$25	$50	$60

Enterprise:

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

25@25&7½%
No. 202, $1.50..... 40&7½%
P., S. & W. Co.:
Dixon's ..... ₱ doz. 33⅓%

Nos...	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal ..... 40@40&5%
Hales ..... 60&10&5%
Little Giant..... ₱ doz. 40@50%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

New Triumph No. 605, ₱ doz. $24.00. 40&10%
Russwin Food, No. 1, $24.00; No. 2, $27.00 ..... 45&10&10%
$15.00 $18.00
Enterprise Beef Shavers..... 25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₱ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ₱ doz. $4.00

Tobacco—

All Iron, Cheap...doz, $4.25@4.50
Enterprise ..... 25&30%
National, ₱ doz., No. 1, $21; No. 2, $18 ..... 40%

Diggers, Post Hole, &c—

Disston's:
Rapid, ₱ doz., $24.00..... 25%
Samson, ₱ doz., $34.00..... 25%
Iwan's Imp'ved Post Hole Augers..40%
Vaughan Pattern Post Hole Augers, ₱ doz., $7.00
Perfection Post Hole Diggers, ₱ doz. $8.75
Split Handle Post Hole Diggers, ₱ doz., $7.75
Hercules Pattern, ₱ doz..... $10.00
Kohler's, ₱ doz., Universal, $15.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer..... $7.50
Never-Break Post Hole Diggers, ₱ doz., $24.00..... 60%

Dividers—See *Compasses.*

Drawing Knives—

See *Knives, Drawing.*

Dressers Emery Wheel—

Sterling Emery Wheel Dressers..... 35%
Sterling Wheel Dresser Cutters..... 35%

Drills and Drill Stocks—

Blacksmith's Common Drilling Machines ..... $1.50@1.75
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓%
Goodell Automatic Drills 50&10@60&10%
Millers Falls Automatic Drills..33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved 40%
Ratchet, No. 012..... 40%
Ratchet, Celebrated..... 40%
Ratchet, Whitney's, P., S. & W., 50&5%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00..... 33⅓%

Twist Drills—

Bit Stock.....70@70&5%
Taper and Straight Shank, 60&10@70%

Drivers, Screw—

Screw D'ver Bits, per doz..45@50¢
Balsey's Screw Holder and Driver, ₱ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits..... 30%
Champion 50%
Disston's 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet..... 35%
Goodell's Auto..... 65@65&10%
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, [illegible] Ar. 30&10%
Swan's:
Nos, 7565 to 7567 ..... 60%; No. 7540, 40&10%

Eave Trough, Galvanized—

Territory...	*Gal. Steel.*	*Charcoal. Iron.*
Northeastern.	75&10&5%	60&20%
Eastern.....	80&21½%	60&20%
Pittsburgh	..80&20%	65&10%
Central	...80&10&10&21½%	65&10%
Northwestern.	80&10&10%	65&10%
Western	....80&10%	60&10&5%
Tennessee	...80&5%	60&10&5%
Southern	.... 80%	60&10&5%
Southwestern.	75&10&2½%	60&5%

Terms.—2% for cash. Factory shipments generally delivered.
Note.—Lower prices are made in some sections.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories: Galv. Steel and Galv. C. I. Standard Gauge.....85@85&10%
No. 26..... 50%
No. 24..... 25%
No. 22..... 10%

Elbows, Stove Pipe—

Edwards, Standard Blue....40&10&10%
Edwards, Royal Blue.....40&10&10%
Reeves, Dover, one piece.....40&10%

Emery, Turkish—

	½ to 4/6:	5½ to 220:	Flour.
Kegs .....lb.	5 ¢	5½¢	3½¢
½ Kegs.....lb.	5½¢	5¾¢	3¾¢
¼ Kegs.....lb.	5½¢	6 ¢	4 ¢
10-lb. cans, 10 in case....	6½¢	7 ¢	6 ¢
10-lb. cans, less than 10.....	10 ¢	10 ¢	8 ¢
Less quantity..	10 ¢	10 ¢	8 ¢

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice—

—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's .....50&10%
Walling's .....40&10%
Upson's Patent.....40%

Cord and Weight—
Ives and Titan.....33⅓%

Corrugated—
Acme Corrugated Fasteners.....70%

Faucets—
Cork Lined.....50&10@60%
Metallic Key, Leather Lined, .. 60&10@70%
Red Cedar.....40&5@40&10&5%
Petroleum .....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star 60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List Nov. 1, 1899.
Best Brands.....70&10@75&10%
Standard Brands.....75&10@80%
Lower Grade....75&10&10@80&10%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%

Fixtures, Fire Door—
Allith Underwriters' Approved.....50%
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

Inch	*15*	*17*	*19*	*21*
Per doz.	*$3.60*	*3.85*	*4.15*	*4.65*

P., S. & W. Co.....25%
Reading Hardware Co.....60%

Fodder Squeezers—
See *Compressors.*

Forks—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....66⅔%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley....40%
Plated.—See Spoons.

Frames— Wood Saw—
White, S'g't Bar, per doz. 75@80¢
Red, S'g't Bar, per doz. $1.00@1.25
Red, Dbl. Brace, per doz. $1.40@1.50

Freezers, Ice Cream—

Qt.....	*1*	*2*	*3*	*4*	*6*
Each....	*$1.25*	*$1.60*	*$1.90*	*$2.20*	*$2.80*

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*
Hemp $2.75
Cotton 3.20
Waterproof Sgl. Taped..3.65
Waterproof Dbl. Taped..4.40
Waterproof Tpl. Taped..5.15
10&2½%

Gates, Molasses and Oil—
Stebbins' Pattern.....80@80&5%

Gauges—
Marking, Mortise, &c..50@50&10%
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.80
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....65@65&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush, 25&10@50%
Elwell's 40%

Grease, Axle—
Common Grade...gro. $6.00@$6.50
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ℔ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

Grinders—
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—
Cow Ties.....65@65&10%
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

Hammers—
Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10%
Farriers' .....40&10%
Riveting .....40&10%
Machinists' .....60&10%
Blacksmiths' 50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60@60&10%
Rivet and Tinners'.40&7½@40&12½&5%

Heavy Hammers and Sledges—
Under 3 lb., per lb., 50¢...80&10%
3 to 5 lb., per lb., 40¢...80&10&10%
Over 5 lb., per lb., 30¢.....
Over 5 lb., per lb., 30¢.80&10&10%

Handles—
Agricultural Tool Handles
Axe, Pick, &c....60&10@60&10&5%
Hoe, Rake, &c.....40%
Fork, Shovel, Spade, &c.:
Long Handles.....40%
D Handles.....40%
Cross-Cut Saw Handles—
Atkins' 40%
Champion 50%
Disston's 50%
Mechanics' Tool Handles—
Auger, assorted...gro. $3.00@$3.50
Brad Awl.....gro. $1.65@$1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.10
Socket Firming, Apple, $1.75@ $1.95; Hickory.....1.60@1.75
Socket Framing, Hickory, $1.60@$1.75
File, assorted.....gro. $1.30@$1.10
Hammer, Hatchet, &c., 60&10@60&10&5%
Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢
Plane Handles:
Jack, doz., 30¢; Fore, doz...45¢
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ℔ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ℔ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ℔ doz. R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ℔ doz., 12 to 14 in., $2.00.
30&10%

Hangers—
NOTE—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.

Allith Mfg. Co.:
Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door.....50%
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&2½%
Roller Bearing.....70&2½%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion $2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction 60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B, D, No. 17, $1.25; F, D, No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D, No. 101 .....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B, D, No. 20.....50&10%
Trolley B, D, No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B, Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Myers' Stayon Hangers.....60%
Extra 5@10% often given.

Hangers— Garment—
Pullman Trouser, ℔ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....℔ gro. $9.60

Gate—
Myers' Patent Gate Hangers, ℔ doz. net $4.50

Joist and Timber—
Lane Bros. Co.....30%

Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ℔ doz..60%

Hatchets—
Regular list, first qual.40&12½@—
Second quality.....50&10&5@—

Heaters, Carriage—
Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....25%
Clark Coal, ℔ doz., $0.75.....20%

Hinges—
Blind and Shutter Hinges
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair.....	*$0.75*	*1.35*	*2.70*

Mortise Shutter: (L. & P., O. S., Acme, &c.)

No.	*1*	*1½*	*2*	*2½*
Doz. pair....	*$0.70*	*.65*	*.60*	*.55*

Mortise Reversible Shutter (Buffalo, &c.):

No.	*1*	*1½*	*2*
Doz. pair.....	*$0.70*	*.65*	*.60*

North's Automatic Blind Fixtures, No. 2, for Wood, $3.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $2.00; No. 111, for brick, $2.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1617½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Tip Pat'n, No. 1.....75&10%
No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire 65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with L'tch's.	*$2.00*	*2.70*	*3.60*
Hinges only.....	*1.25*	*1.90*	*3.32*
Latches only.....	*.70*	*.75*	*.35*

New England:
With Latch.....doz..@$2.00
Without Latch.....doz..@$1.60
Reversible Self-Closing:
With Latch.....doz..@$1.75
Without Latch....doz. ...@$1.35
Western:
With Latch.....doz. $1.75
Without Latch.....doz..$1.15
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co, Matchless.....50%

Spring Hinges—
Holdback, Cast Iron...$6.75@$7.00
Non-Holdback, C'st Iron $6.50@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Bommer Ball Bearing Floor..40%
Bommer Spring Hinges.....40%
No. 999 Wrot. Steel Hold Back, ℔ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American 30%
Columbia, ℔ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ℔ gr.$12.00
Columbian Hinges.....60&10%
Gem, new list.....30%
Clover Leaf and Acorn, gro. lots, $5.10; ½ gro, lots.....$6.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Lawson Mfg. Co., Matchless...30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Chief Ball Bearings Floor Hinge 50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ℔ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list December 20, 1904:
Light Strap Hinges..50&10%
Heavy Strap Hinges..60&5%
Light T Hinges.....50%
Heavy T Hinges.....40%
Extra Hvy. T Hinges.50&10%
Hinge Hasps.....33⅓%
Cor. Heavy Strap....60&5%
Cor. Ex. Heavy T...50&10%
Extra 10&7½&2½%

Screw Hook and Strap.
6 to 12 in..lb. 3½¢
1½ to 20 in..lb. 3½¢
22 to 36 in..lb. 3 ¢

Screw Hook and Eye:
⅜ to 1 inch.....lb. 6½¢
⅝-inch .....lb. 7½¢
½-inch .....lb. 8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—
M'f'gr's list, price per gross:

Inch	*15*	*16*	*17*	*18*
Galv. Open....	*$35*	*$39*	*$42*	*$46*
Jap. Open.....	*26*	*28*	*31*	*35*
Galv. Funnel...	*43*	*48*	*52*	*56*
Jap. Funnel....	*33*	*36*	*59*	*43*

10&7½&5%

Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

Hoes— Eye—
Scovll and Oval Pattern, 60&10@60&10&10%
Grub, list Feb. 23, 1899. 70&10@70&10&10%
D. & H. Scovll.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) 60%

Handled—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$3.20
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.40
B. B., 6½ in.....$3.50
Acme Weeding.....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱doz.$5.25

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Angular, ₱ doz. $24.00.....45&10%

Door—

Bardsley's, Iron, 40%; Brass and Bronze 25%
Empire 50%
Pullman 25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip 50%
Superior 33⅓%

File and Tool—

Nicholson File Holders and File Handles .....33⅓@40%

Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz.....$2.00

Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs $1.25
Dash Rein Holder, ₱ doz. pairs.$1.25

Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

Wire—

Belt 80%
Wire C. & H. Hooks.....80%
Bradley Metal Clasp Wire, Coat and Hat, 70&10%; Ceiling.....70&10%
Columbian Hdw. Co., Gem.....70&5%
Parker Wire Goods Co., King..70&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

Wrought Iron—

Box, 6 in., per doz., $0.90; 8 in., $1.15.
Cotton .....*doz. $1.25@$1.50*
Wrought Staples, Hooks, &c.—See Wrought Goods.

Miscellaneous—

Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65
Grass, boss', all sizes, per doz., $2.75@$3.00
Grass, common grades, all sizes, per doz.....*$1.25@$1.50*
Whiffletree .....*lb. 5¼@6¢*
Hooks and Eyes:
Brass .....60@60&10%
Malleable Iron.....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks 40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder .....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—

See *Nails, Horse.*

Horseshoes—

See *Shoes, Horses.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition .....*ft. 6@6½¢*
3-ply Guaranteed.....*ft. 8½@9¢*
4-ply Guaranteed.....*ft. 9½@12¢*
Cotton Garden, ¾-in., coupled:
Low Grade.....*ft. 8@ 9¢*
Fair Quality.....*ft. 10@11¢*

Irons— Sad—

From 4 to 10.....*lb. 2½@2¾¢*
B. B. Sad Irons.....*lb. 3¼@3½¢*
Mrs. Potts', cents per set:

	Nos. 50	55	60	65
Jap'd Tops	83	80	93	91
Tin'd Tops	88	85	98	95

New England Pressing..lb.3¾@4¼¢

Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner 60%

Pinking—

Pinking Irons.....*doz. 60@85¢*

Irons, Soldering

See *Coppers.*

Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport 50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

Ladder—

Richards Mfg. Co., Ladder Jacks..? ¥

Kettles—

Brass, Spun, Plain.....*20@25%*
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....*80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's .....66⅔@70
Watrous 16⅔
L. & I. J. White.....20&5@25%

Hay and Straw—

Serrated Edge, per doz. $5.00@5.50
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

Miscellaneous—

Farriers' .....*doz. $2.60@3.55*
Wostenholm's .....₱ doz. $3.00@3.25

Knobs—

Base, 2½-inch, Birch or Maple, Rubber Tip.....*gro. $1.25@1.40*
Carriage, Jap., Drive, all sizes, gro. 35@40¢
Door, Mineral.....*doz. 65@70¢*
Door, Por. Jap'd.....*doz. 70@75¢*
Door, Por. Nickel..*doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

Lacing, Leather—

See *Belting, Leather*

Ladders, Store, &c.—

Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladles, Melting—

L. & G. Mfg. Co. (low list).....20%
P., S. & W.....40&10%
Reading 60%

Lanterns—Tubular—

Regular, No. 0.....*doz. $4.35@4.50*
Side Lift, No. 0.....*doz. $4.60@4.75*
Hinge Globe, No. 0. doz. $4.60@4.75
Other Styles.....*40@40&10%*

Bull's Eye Police—

3-inch .....*$3.75@4.00*

Latches— Thumb—

Roggin's Latches, Jap'd, with Screws .....*doz. 35@40¢*

Door—

Allith Mfg. Co., Reliable and Alligator, 50%; Reliable Cold Storage, 50%
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125 .....50&5%
Richards' Trump, No. 127.....$1.50

Leaders, Cattle—

Small.....*doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

Leathers, Pump—

See *Pumps—*

Lifters, Transom—

R. & E.....10%

Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	*$2.30*	*1.95*	*1.75*
75 feet	*$1.95*	*1.65*	*1.50*

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50. Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50 .....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

Locks— Cabinet—

Cabinet Locks....*33⅓@33⅓@5%*

Door Locks, Latches, &c —

NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass .....75&10%

Sash, &c.—

Ives' Patent:
Bronze and Brass, 55&5%; Crescent, 60%; Iron, 60%; Window Ventilating, 40&20%; Robinson Pat. Ventilating Sash Lock, 33⅓%.
Pullman Patent Ventilating Lock..25%
Reading Sash Locks.....40%

Machines—Boring—

Com. Upr't, without Augers, $2.00@2.25
Com. Angl'r, without Augers, $2.25@2.50
Swan's Improved.....40&10%
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90

Corking—

Reisinger Invincible Hand Power... ₱ doz. $48.00

Fence—

Williams' Fence Machines....each, $5.50

Hoisting—

Moore's Anti-Friction Chain Hoist,30%
Moore's Hand Hoist, with Lock Brake 20%
Moore's Cyclone High Speed Chain Hoist 25%

Ice Cutting—

Chandler's 12½%

Washing

Boss Washing Machine Co.:	Per doz.
Boss No. 1	$57.00
Boss Rotary	$57.00
Champion Rotary Banner No. 1	$57.00
Standard Champion No. 1	$50.00
Standard Perfection	$27.00
Cincinnati Square Western	$33.00
Uneeda American, Round	$33.60

Mallets—

Hickory .....*45&5@50%*
Lignumvitæ .....*45&5@50%*
Tinners' Hickory and Apple-wood .....*doz. 45&5@50%*

Mangers, Stable—

Swett Iron Works.....50%

Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list,50%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

Motors, Water—

Divine's Red Devil.....30%
Lippincott's 30%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheapest, 10-in., $2.00; advance 10¢ for each size.
Cheap, 10-in., $2.25; advance 15@20¢ for each size.
Better Grade, 10-in., $3.00; advance 25¢ for each size.

	12	*14*	*16*	*18 in.*
High Grade	*$4.50*	*4.75*	*5.00*	*5.25*

Continental 60%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania 60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl. list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list,40%
Horse .....40&5%
Pony .....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

Nails—

Wire Nails and Brads, Miscellaneous .....*85&5@85&10%*
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	...40&5%
Coleman	13	12	12	11	11	.....net
New Haven	23	21	20	19	18	...40&5%
Livingston	19	18	17	16	16	.....10%

Western .....₱ lb 8½¢
Jobbers' Special Brands, per lb. 9¢

Picture—

	1½	*2*	*2½*	*3 in.*
Brass Hd. gro.	*.45*	*.55*	*.60*	*.70*
Por. Head, gro.	*1.10*	*1.10*	*1.10*	*1.10*

Upholsters—

Brass *30%*
Plated .....*30&10%*

Nippers—

See *Pliers and Nippers.*

Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples....80@80&10%

Nuts— *Blank or Tapped.*

Cold Punched:	*Off list.*
Square	*5.40@5.50¢*
Hexagon	*6.00@6.10¢*
Square, C., T. & R.	*5.80@5.90¢*
Hexagon, C., T. & R.	*6.60@6.70¢*
Hot Pressed:	
Square	*5.80¢*
Hexagon	*6.30¢*

Oakum—

Best .....*lb. 6¼¢*
U. S. Navy.....*lb. 6 ¢*
Navy .....*lb. 5 ¢*
Plumbers' Spun Oakum..2¾@3 ¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Steel, Copper Plated.....*75%*
Chase or Paragon:
Brass and Copper.....*50&10%*
Zinc .....*65&10%*
Railroad .....*60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers—Packing Box—

Herculever, ₱ doz., $24.....30%

Can Openers—

	Per doz.
Sprague, Iron Handle	*30@35¢*
Sprague, Wood Handle	*40¢*
Sardine Scissors	*$1.75@3.00*

Yankee Can and Bottle Opener, ₱ doz., net, $0.75; Little Gem, ₱ doz., net.....$0.65

Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

Packing—

Asbestos Packing. Wick and Rope, any quantity.....*18@20¢*

Rubber—

(Fair quality goods.)

	1	*2*	*3*	*4*	*5*
Sheet, C. I					*11@12¢*
Sheet, C. O. S					*11@12¢*
Sheet, C. B. S					*12@13¢*
Sheet, Pure Gum					*40@45¢*
Sheet, Red					*40@50¢*
Jenkins' '96, ₱ lb, 80¢					.....25%

Miscellaneous—

American Packing....*lb. 7@10 ¢*
Cotton Packing.....*lb. 16@25 ¢*
Italian Packing.....*lb. 9@10¢*
Jute .....*lb. 4@4¼¢*
Russia Packing.....*lb. 9@10¢*

Pails, Water, Well, &c.—

See *Buckets.*

Pans— Dripping—

Standard List...70&10@70&10&5%
Edwards, Royal Blue.....65&7½%

Fry—

Common Lipped:

Nos.	*1*	*2*	*3*	*4*	*5*
Per doz.	*$0.75*	*0.80*	*0.90*	*1.10*	*1.30*

Refrigerator, Galva.—

Inch	*12*	*14*	*16*	*18*
Per doz.	*$1.75*	*2.25*	*2.80*	*3.15*

Paper—Building Paper

Asbestos: *lb.*
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft..*2½¢*
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.....*3½¢*
Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.....*3¢*
Per roll.
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll, 48@58¢
Medium weight, 30 lbs. to roll, 56@70¢
Heavy weight, 40 lbs. to roll, 75@78¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton.....*$54.50*
Red Rope Roofing, 250 sq. ft. per roll.....*$1.75*

Tarred Paper—

1 ply (roll 400 sq. ft.), ton, $34.00@$38.00
2 ply, roll 108 sq. ft.....*65¢*
3 ply, roll 108 sq. ft.....*88¢*
Slater's Felt (roll 500 sq. ft.).80¢

Sand Paper and Cloth—

Flint and Emery.....*50&10%*
Garnet Paper and Cloth.....*25%*

Parers—Apple—

Goodell Co.:

Family Bay State	₱ doz.	$15.00
Improved Bay State	₱ doz.	$36.00
New Lightning	₱ doz.	$7.00
Turn Table '98	₱ doz.	$6.00
White Mountain	₱ doz.	$5.00
Bonanza Improved	each	$7.50
Dandy	each	$10.00
Eureka Improved	each	$30.00
New Century	each	$30.00
Ranger	each	$25.00

Livingston Nail Co.:

Daisy	₱ doz.	$4.00
Little Star	₱ doz.	$5.00
Rocking Table	₱ doz.	$6.20

Reading Hardware Co.:

Advance	₱ doz.	$4.00
Baldwin	₱ doz.	$4.00
Reading 72	₱ doz.	$3.25
Reading 78	₱ doz.	$6.25

Potato—

Saratoga .....₱ doz. $7.00
White Mountain.....₱ doz. $6.00

Picks and Mattocks—

(List Jan., 1908.)

List .....*70&10@70&10&10%*
Cronk's Handled Garden Mattock, ₱ doz., No. 2, $2.60; No. 3, $6.40.

Pinking Irons—
See *Irons, Pinking.*

Pins, Escutcheon—
Brass .....50@50&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—
Standard, 2-6 in.....76@—%
Extra Heavy, 2-6 in..75&10@—%
Fittings, Standard and Heavy, 80&10@80&10&10%

Pipe, Merchant—

	Consumers, Steel. Blk.	Galv.	*Carloads, Iron.* Blk.	Galv.
	%	%	%	%
⅛ and ¼ in..66	50	61	..	
⅜ in.....68	54	66	52	
½ in.....70	58	68	56	
¾ to 6 in....71	56	69	54	
7 to 12 in....71	56	69	54	

Pipe, Vitrified Sewer—
Carload lots.
Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:
First-class 87%
Second-class 90%

Pipe, Stove—

Per 100 joints.	C. L.	L. C. L.
Edwards' Nested:		
5 in., Standard Blue....	$6.25	$7.25
6 in., Standard Blue....	6.75	7.75
7 in., Standard Blue....	7.75	8.75
5 in., Royal Blue.....	7.00	8.00
6 in., Royal Blue.....	7.50	8.50
7 in., Royal Blue.....	8.50	9.50
Wheeling Corrugating Co.'s Nested:		
5 in., Uniform Color..	$6.15	$7.15
6 in., Uniform Color..	6.65	7.65
7 in., Uniform Color..	7.65	8.65

Planes and Plane Irons—
Wood Planes—
Bench, first qual.....30@30&10%
Bench, second qual...40@40&10%
Molding .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union 60%

Iron Planes
Chaplin's Iron Planes.....50&10%
Union 60%

Plane Irons—
Wood Bench Plane Irons, list Dec. 12, '06.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union 50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—
Kohler's Eclipse.....₱ doz. $8.00

Plates—
Felloe .....*lb*. 3¾@4¢

Pliers and Nippers
Button Pliers....75&5@75&10&5%
Gas Burners, per doz., 5 in., $1.25 @1.50; 6 in., $1.45 $1.50.
Gas Pipe.. 7 8 10 12-in.
$2.00 $2.25 $2.75 $3.50
Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's 60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers 40%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....40%

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Dulex.....35%
Woods' Extension.....33⅓%

Points, Glaziers'—
Bulk and 1-lb. papers....*lb*. 9 ¢
½-lb. papers.....*lb*. 9½¢
¼-lb. papers.....*lb*. 10 ¢

Police Goods—
Manufacturers' Lists..25@25&5%
Tower's 25%

Polish—Metal, Etc—
Prestoline Liquid, No. 1 (¼ pt.), ₱ doz., $3.00; No. 2 (1 qu.), $9.00...40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gro. $4.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz., $1.25.
Barkeepers' Friend Metal Polish, ₱ doz., $1.75.

Stove—
Black Eagle Benzine Paste, 5 lb cans, ₱ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ₱ doz. 75¢
Black Jack Paste, ¾ lb cans, ₱ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon, ₱ gr. $5.75.....10%
Dixon's Plumbago.....₱ lb 8¢
Fireside .....₱ gr. $2.50
Gem, ₱ gr. $4.50.....10%
Japanese .....₱ gr. $3.50
Jet Black.....₱ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ₱ doz. $1.50

Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ₱ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ₱ lb..20¢

Poppers, Corn—
1 qt. Square..doz.$0.80; gro.$8.75
1 qt. Round..doz.$0.90; gro.$10.00
1½ qt. Square.doz.$1.20; gro.$12.00
2 qt. Square..doz.$1.50; gro.$15.00

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—
See *Parers, Potato.*

Pots, Glue—
Enameled 40%
Tinned .....50&10%

Powder—
In Canisters:
Duck, 1 lb.....*each* 45¢
Fine Sporting, 1 lb....*each* 75¢
Rifle, ½-lb.....*each* 15¢
Rifle, 1 lb.....*each* 25¢
In Kegs:
25-lb. kegs.....$3.50
25-lb. kegs.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

King's Smokeless:	Shot Gun.	Rifle.
Keg (25 lb bulk)...	$12.00	$15.00
Half Keg (12½ lb bulk)..	6 25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)..	14.00	17.00
Half case 12 (1 lb c. bk)..	7.25	8.75

Presses—
Fruit and Jelly—
Enterprise Mfg. Co.....20@25%
Seal Presses—
Morrill's No. 1, ₱ doz., $20.00.....50%

Pruning Hooks and Shears
See *Shears.*

Pullers, Nail—
Cyclops 50%
Miller's Falls, No. 3, ₱ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ₱ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant 50%
Staple Pullers, Utica and Davison 60%

Pulleys, Single Wheel—

Inch	*1½*	*1¾*	*2*	*3*
Awning or Tackle, doz.	*$0.30*	*.45*	*.60*	*1.05*
Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55				
Inch	2	2¼	2½	
Hot House, doz...	*$0.65*	*.85*	*1.20*	
Inch	*1¼*	*1½*	*1¾*	*2*
Screw, doz....	*$0.16*	*.19*	*.23*	*.30*
Inch	*1¾*	*2*	*2¼*	*2½*
Side, doz.....	*$0.25*	*.40*	*.55*	*.60*
Inch	*1½*	*1¾*	*2*	*2½*

Sash Pulleys—
Common Frame; Square or Round End, per doz., 1¾ and 2 in.....17@20¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in....20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ₱ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. .....20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

Pumps—
Cistern 60%
Pitcher Spout.....75&5@75&10%
Wood Pumps, Tubing, &c....50%
Barnes Dbl. Acting (low list)....40&5%
Barnes Pitcher Spout.....75&10%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....₱ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50%
Flint & Walling's Fast Mail (low list) 50%
Flint & Walling's Tight Top Pitcher .....75&10%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....40&5%
Myers' Power Pumps.....40&5%
Myers' Spray Pumps.....40&5%

Pump Leathers—
Plunger and Valve Leathers—Per gro.:

No.....	*1*	*2*	*3*	*4*	
	$5.00	*6.00*	*7.00*	*8.00*	30%
Cup Leathers—Per 100:					
Inch....	*2½*	*3*	*3½*	*4*	
	$5.00	*7.00*	*9.00*	*12.00*	

Punches—
Saddlers' or Drive, good, doz.50@75¢
Spring, single tube, good quality *$1.75*
Revolving (4 tubes)....*doz.$3.50*
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos, 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44.....40%

Rail—Barn Door, &c.—
Sliding Door, Painted Iron, 2½@2¾¢
Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢.....30%
Allith Mfg. Co.: Reliable Hanger Track 50%
Cronk's:
Double Braced Steel Rail..₱ ft. 3¼¢
O. N. T. Rail.....$3.12
Griffin's:
xxx, ₱ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ₱ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ₱ 100 ft.....$3.45
O. N. T., ₱ 100 ft., 1 in., $3.00; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....₱ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ₱ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ₱ ft., 11¢
1 x 3-16 Track.....60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ₱ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 22¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

Rakes—
NOTE.—Many goods are sold at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, 75%; Ideal, 80%; Victor.....80&25%
Queen City Lawn, ₱ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ₱ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ₱ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Lawn Queen, 20-tooth....₱ doz. $3.15
Lawn Queen, 24-tooth....₱ doz. $3.25
Paragon, 20-tooth.....₱ doz. $2.70
Paragon, 24-tooth.....₱ doz. $2.75
Steel Garden, 14-tooth....₱ doz. $2.40
Malleable Garden, 14-tooth, ₱ doz. $2.00@2.25

Rasps, Horse—
Disston's 75%
Heller Bros.'.....70&5@70&10&5%
Liverright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—
Liana Bo-ras-ic.....60%
Fox Razors, ₱ doz., No. 42, $20.00; No. 44, $20.00; No. 82, Platina, $25.00. } Dis. 40%
Red Devil.....65%

Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P, 33⅓%; 2904 PN, 33⅓%; 0924 N, 33⅓%; 02084 N, 33⅓%; 002904 PN, 33⅓%; 802 N, 33⅓%; 986 PN, 2904 N, 974 PN.....25%
5009 PN 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*
Japanned, Electroplated and Bronzed 70%
White Porcelain Enamel..50&10%
Solid Brass or Bronze Metal..40%

Revolvers—
Single Action.....*95¢@$1.00*
Double Action, except 44 cal.$2.00
Double Action, 44 caliber...*$2.00*
Automatic *$4.00*
Hammerless *$4.50*

Riddles, Hardware Grade
16 in.....*per doz.$2.50@$2.75*
17 in.....*per doz.$2.75@$3.00*
18 in.....*per doz.$3.00@$3.25*

Rings and Ringers—
Bull Rings—

	2	*2½*	*3 inch.*
Steel	*$0.70*	*0.75*	*0.80 doz.*
Copper	*$1.10*	*1.25*	*1.65 doz.*

Hog Rings and Ringers—
Hill's Rings, gro. boxes.$4.50@$4.50
Hill's Ringers, Gray Iron, doz., 60@75¢
Hill's Ringers, Malleable Iron, doz.80@95¢
Blair's Rings..per gro.$5.00@$5.50
Blair's Ringers...per doz.75@90¢

Rivets and Burrs—
Copper .....50@50&5%
Carriage, Coopers', Tinners', &c.:
Black .....70&10%
Metallic Tinned.....70%

Bifurcated and Tubular—
Assorted in Boxes.
Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32c.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

Rope—
Manila, 7-16 in. diam. and larger: Pure .....*lb*. 6½@10¢
Sisal, 7-16 in. diam. and larger: Pure .....*lb*. 6¼@6½¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Pure .....*lb*. 6¾@7 ¢
Sisal, Tarred, Medium Lath Yarn: Pure .....*lb*. 5¾@6 ¢
Cotton Rope:
Best, ¼-in. and larger...18@20¢
Medium, ¼-in. and larger.16@17¢
Common, ¼-in. and larger..10¢
In coils, ½¢ advance.
Jute Rope:
Thread, No. 1, ¼-in. and up, lb. .....6¼¢
Thread, No. 2, ¼-in. and up, lb. .....5¾¢

Wire Rope—
Galvanized .....37½&2½%
Plain .....45&2½%

Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

Rules
Boxwood .....60@60&10%
Ivory .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood 60%
Flexifold 40%
Ivory .....25@25&10%
Miscellaneous.....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins':
Circular 45%
Band ....50@50&10%
Butcher Saws....50%
Cross Cuts....35%
One-Man Cross Cut....40%
Narrow Cross Cut....50%
Hand, Rip and Panel....35&5%
Miter Box and Compass....40%
Mulay, Mill and Drag....45%
Wood Saws....40&10%
Chapin-Stephens Co.:
Turning Saws and Frames..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws....30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth..50%
Band, 2 to 18 in. wide....60%
Band, ¼ to 1¾....60%
Crosscuts....45%
Narrow Crosscuts....50%
Mulay, Mill and Drag....50%
Framed Woodsaws....25%
Woodsaw Blades....25%
Woodsaw Rods, Tinned....15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8....25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination....30%
Compass, Key Hole, &c....25%
Butcher Saws and Blades....30%
C. E. Jennings & Co.'s:
Back Saws....16%%
Butcher Saws....25&7½%
Compass and Key Hole Saws, 33⅓&6⅔&7½%
Framed Wood Saws....25&7½%
Hand Saws....12½%
Wood Saw Blades....33⅓&6⅔&7½%
Millers Falls:
Butcher Saws....15&10%
Star Saw Blades....15&10%
Massachusetts Saw Works:
Victor Kitchen Saws....40&10&50%
Butcher Saws Blades....35@40%
Peace & Richardson's Hand Saws..30%
Simonds':
Circular Saws....45%
Crescent Ground Cross Cut Saws..30%
One-Man Cross Cuts....40&10%
Gang Mill, Mulay and Drag Saws..45%
Band Saws....50%
Back Saws....25@25&7½%
Butcher Saws....35@35&7½%
Hand Saws....25@25&7½%
Hand Saws, Bay State Brand....45%
Compass, Key Hole, &c..25@25&7½%
Wood Saws....40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws....50%

Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A..25%
Disston's:
Concave Blades....25%
Keystone Blades....35%
Hack Saw Frames....30%
Simonds File Co....35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180....40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades....40&10%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades....35&5&10%
Star Hack Saws and Blades....15&10%
Sterling Hack Saw Blades..30&10&5%
Sterling Hack Saw Frames..30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%
Victor Hack Saw Blades....20%
Victor Hack Saw Frames....40%
Whitaker Mfg. Co.:
National Hand Blades....40%
National Hand Frames....30&5%
National Power Blades....30&10%

Scroll—

Barnes, No. 7, $15....25%
Barnes' Scroll Saw Blades....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20....20%
Lester, complete, $10.00....15&10%
Rogers, complete, $3.50 and $4.00....15&10%

Scales—

Union Platform, Plain..$2.10@2.20
Union Platform, Stpd..$2.20@2.30
Chatillon's:
Eureka....25%
Favorite....40%
Grocers' Trip Scales....50%
The Standard Portables....40%
The Standard R. R. and Wagon....50&10%

Scrapers—

Box, 1 Handle....doz..$1.85@2.10
Box, 2 Handle....doz..$2.35&2.50
Ship...Light, $2.00; Heavy, $4.50
Chapin-Stephens Co., Box..30@30&10%
Richards Mfg. Co., Foot....60%

Screws—Bench and Hand

Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼, $3.50@3.75
Bench, Wood....20@20&10%
Hand, Wood....70&10@70&10&10%
Chapin-Stephens Co., Hand....70@70&10&2½%

Coach, Lag and Hand Rail—

Lag, Cone Point...80&5@80&10%
Coach, Gimlet Point..80@80&5%
Hand Rail....70&10@75%

Jack Screws—

Standard List....70&10@75%
Millers Falls....50&10&10%
Swett Iron Works....70@75%

Machine—

Cut Tread, Iron, Brass or Bronze:
Flat Head or Round Head, 50@50&10%
Fillister Head....40@40&10%
Rolled Thread, F. H. or R. H., Iron....75&10%
F. H. or R. H., Brass, Nos. 8 to 14....65&10%

Set and Cap—

Set (Iron)....75&10&7½%
Set (Steel), net advance over Iron....25%
Sq. Hd. Cap....70&10&7½%
Hex. Hd. Cap....70&10&7½%
Rd. Hd. Cap....50&7½%
Fillister Hd. Cap....60&7½%

Wood—

List July 23, 1903.
Flat Head, Iron....87½&5@..%
Round Head, Iron....85&5@..%
Flat Head, Brass....80&5@..%
Round Head, Brass..77½&5@..%
Flat Head, Bronze....75&5@..%
Round Head, Bronze..72½&5@..%
Drive Screws....87½&5@..%

Scroll Saws—

See *Saws, Scroll.*

Scythes—

Per doz.
Grass, No. 1, Plain....$7.00
Clipper, Bronzed Webb....$7.25
No. 3 Clipper, Pol'd Webb...$7.50
No. 6 Clipper and Solid Steel..$7.75
Bush, Weed and Bramble, Nos. 11, 12 and 13....$7.25
Grain, No. 1....$9.00@9.50
Bronzed Webb, No. 1...$9.25@9.75
Nos. 3 and 4 Clipper, Grain, $9.50@10.00
Solid Steel, No. 6....$10.00@10.50

Seeders, Raisin—

Enterprise....25@30%

Sets— Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, 612; 2, $16; 3, $12....50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18..20&10%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel....per doz. sets $9.00

Sets, Nail—

Octagon....gro..$3.50@3.75
Buck Bros....27½%
Cannon's Diamond Point, per gro, $12....40&10%
Mayhew's....per gro. $9.00
Snell's Corrugated, Cup Pt....40&10%
Snell's Knurled, Cup Pt....40&10%
Victor Knurled, Cup Pt....per gro. $7.50

Rivet—

Regular list....75@75&10%

Saw—

Atkin's:
Criterion....40%
Adjustable....40%
Disston's Star, Monarch and Triumph....30%
Morrill's No. 1....$15.00
Nos. 3 and 4, Cross Cut....$20.60
No. 5, Mill....$30.00
Nos. 10, 11, 95....$15.60
No. 1 Old Style....$10.00
Special....$16.25
Giant Royal Cross Cut....per doz. $8.00
Royal, Hand....per doz. $4.50
Taintor Positive....per doz. $6.75

Shaving—

Fox Shaving Sets, No. 30....per doz., net, $24.00
Smith & Hemenway Co.'s....75%

Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, per doz....$1.50
Mounted Kitchen Sand Stone, per doz....$1.50
Natural Grit Carving Knife Hones, per doz....$3.00
Quick Cut Emery Carving Knife Hones, per doz....$1.50
Quick Edge Pocket Knife Hones, per doz....$2.50
} 50%

Skate—

Smith & Hemenway Co., Eureka..50%

Shaves, Spoke—

Iron....doz..$1.25
Wood....doz..$2.00
Bailey's (Stanley R. & L. Co.)....45%
Chapin-Stephens Co....30@30&10%
Goodell's, per doz, $9.00....15&10%

Shears—

	7	8	9 in.
Cast Iron..			
Best	*$16.00*	*18.00*	*20.00 gro.*
Good	*$13.00*	*15.00*	*17.00 gro.*
Cheap	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality Jap....70&10&10%
Best quality Nickel..60&10&10%
Tailors' Shears....40&10&10%
Acme Cast Shears....40@40&5%
Heinisch's Tailor's Shears....10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles....70&10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list....30&10&5%
Grass....50&10%
Horse or Mule....50&10%
J. Wiss & Sons Co.:
Best Quality Jap'd....60&10%
Best Quality Nickeled....50&10%
Tailors'....25%

Tinners' Snips—

Steel Blades....40&5@2½&10%
Steel Laid Blades....40&10@50%
Forged Handles, Steel Blades, Berlin....50%
Heinisch's Snips....40%
Jennings & Griffin Mfg. Co.'s 6¼ to 10 in....33⅓&7½%
National Cutlery Co.'s Forged Steel..50%
Niagara Snips....40%
P., S. & W. Forged Handles, 25%; W. R. W....40&10%
J. Wiss & Sons Co.:
Wiss Forged Steel....25%

Pruning Shears—

Cronk's Hand Shears....33⅓%
Cronk's Wood Handle Shears....33⅓%
Disston's Combined Pruning Hook and Saw, per doz, $18.00....25%
Disston's Pruning Hook only, per doz., $12.00....25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades....40%
P., S. & W. Co....40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand....60&10%
Lawn and Border, Wilcut Brand, 60&10%

Sheaves— Sliding Door—

Reading....40%
R. & E. list....15%

Sliding Shutter—

Reading list....40%
R. & E. list....10%

Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge....65&10%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
Union League, 12 and 12 gauge; Rival Grade....25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge....20&5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade..20%

Shells, Loaded—

Loaded with Black Powder..40%
Loaded with Smokeless Powder, medium grade....40&5%
Loaded with Smokeless Powder, high grade....40&10&10%
Union Metallic Cartridge Co.:
New Club, Black Powders....40%
Nitro Club, Smokeless Powders..40&5%
Arrow, Smokeless Powders, 40&10&10%
Winchester:
Smokeless Repeater Grade....40&5%
Smokeless Leader Grade...40&10&10%
Black Powder....40%

Shingles, Metal— Per Sq.

Edwards Mfg. Co.:

	Painted.	Galv.
14 x 20	$4.25	$6.00
10 x 14	4.50	6.25
7 x 10	4.75	6.50

Wheeling Corrugating Co.:

Dixie, 14 x 20 in.	$4.25	$5.50
Dixie, 10 x 14 in.	4.50	6.00
Dixie, 7 x 10 in.	5.00	6.75

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:
Iron....per keg..$4.10
Steel....per keg..$3.85
Burden's, all sizes....per keg $3.90

Shot—

25-lb. bag.
Drop, up to B....$1.80
Drop, B and larger....2.05
Buck....2.05
Chilled....2.05
Dust....2.30

Shovels and Spades—

Association List, Nov. 15, 1902..40%
Avery Stamping Co....40%

Snow Shovels—

Long Handle....$3.25@$3.50
Wood and Mail, D Handle, $3.75@$4.00

Sieves and Sifters—

Hunter's Imitation, gro....$9.00
Hunter's Genuine, per gro..$12.00

Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; per doz....$39.00

Sieves, Seamless Metallic

Per dozen.

Mesh	*1½*	*16*	*18*	*20*
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested....doz. $0.90@0.95
Mesh 20, Nested....doz. $1.00@1.05
Mesh 24, Nested....doz. $1.30@1.40

Sinks, Cast Iron—

Painted, Standard List:
12 x 12 to 22 x 36 in....60%
20 x 24 to 24 x 50 in....50%
24 x 60 to 24 x 120 in....30%
Barnes' low list:
Up to and including 20 x 36 in..50&5%
20 x 40 to 24 x 50 in....45%

NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—

Cast Iron....70@75&10%
Steel....40@45%

Slates, School—

Factory Shipments.
"D" Slates....50@50&10%
Eureka, Unexcelled Noiseless..60@67 tens.
Victor A, Noiseless..60@ tens @5%

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German....40@40&10%
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
High Grade, 40%; Trojan....40%
Jockey....25%

Snaths—

Scythe....60%

Snips, Tinners—See *Shears.*

Spoons and Forks—

Silver Plated—

Good Quality....50&10@60&5%
Cheap....60@60&10%
International Silver Co:
1847 Rogers Bros., 40&10%; Rogers & Hamilton....50&10%
Rogers & Bro., William Rogers' Eagle Brand....50&10%
Anchor, Rogers Brand....60%
Wm. Rogers & Son....60&10%

Miscellaneous

German Silver....60@60&5%

Tinned Iron—

Teas....per gro..50@55¢
Tables....per gro..$0.90@$1.00

Springs— Door—

Bardsley's Spring and Check....40%
Chicago (Coil)....40&10%
Gem (Coil)....20%
Pullman Door and Gate....10%
Reliance (Coil)....40&10%
Star (Coil)....30%
Torrey's Rod, 39 in....per doz. $1.10

Carriage, Wagon, &c.—

1¼ in. and Wider: Per 100 lb.
Black....$4.75@$5.00
Half Bright....$5.75@$5.00
Bright....$5.25@$5.50
Painted Seat Springs:
1½ x 2 x 26....per pair..45@47¢
1½ x 3 x 28....per pair..68@71¢

Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, per doz....$12.00
Enterprise....25@30%
Philadelphia No. 1, per doz, $12; No. 2, $15; No. 3, $20....30%

Squares—

Nickel plated..} List Jan. 5, 1907.
Steel and Iron..} 80@80&5%
Rosewood Hdl. Try Square and T-Bevels....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels....40&10@40&10&10%
Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel....15%

Squeezers, Lemon

Wood, Porcelain Lined:
Cheap....doz..$1.00
Good Grade....doz..$1.25
Tinned Iron....doz..$0.75@1.00
Iron, Porcelain Lined...doz..$1.75

Staples—

Barbed Blind....85&5@85&10%
Electricians'....80&10&10@85%
Fence Staples, Polished, $2.05; Galvanized....$2.35
Poultry Netting Staples....per lb. 3¼@3¼¢

Steels, Butchers'—

Dick's....30%
Foster Bros.'....30%

Steelyards—....30@30&10%

Stocks and Dies—

Blacksmiths'....50@50&10%
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates....25%
Green River....25%
Lightning Screw Plate....25%
Little Giant....25%
Reece's New Screw Plate....25%

Stoners, Cherry—

Enterprise....25@30%

Stones—Oil, &c.

Pike Mfg. Co., 1907 list: per lb
Arkansas St. No. 1, 3 to 5½ in..$2.80
Arkansas St. No. 1, 5½ to 8 in..$3.50
Arkansas Slips No. 1....$1.00
Lily White Washita, 4 to 8 in..60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in..50¢
Washita St., No. 1, 4 to 8 in..40¢
Washita St., No. 2, 4 to 8 in..25¢
Lily White Slips....90¢
Rosy Red Slips....90¢
Washita Slips, Extra....80¢
Washita Slips, No. 1....70¢
Washita Slips, No. 2....40¢
} 33⅓%
India Oil Stones (entire list)..33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit....40%
Quickcut Emery and Corundum Axe Stone, Double Grit....33⅓%
Quickcut Emery Rubbing Bricks..40%
Hindostan No. 1, R'g'lar. per lb 8¢
Hindostan No. 1, Small.. per lb 10¢
Axe Stones (all kinds)....
Turkey Oil Stones, Extra, 5 to 8 in....per lb 80¢
Queer Creek Stones, 4 to 8 in..20¢
Queer Creek Slips....40¢
Sand Stone....6¢
} 33⅓%

Scythe Stones—

Pike Mfg. Co., 1901 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S. S. ℔ gro. $7.00
Extra Indian Pond S. S. ℔ gro. $8.00
No. 1 Indian Pond S. S. ℔ gro. $7.50
No. 2 Indian Pond S. S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery.... ℔ gro. $10.00
Pure Corundum..... ℔ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1904 list 33⅓%
Electro (Artificial), ℔ gro., $12.00 ..... 33⅓%
Lightning (Artificial), ℔ gro., $18.00 ..... 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers..... ℔ gro. $9.00

Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ℔ doz., No. 1, $10.00.... 50%
Morrill's, No. 2, $12.50..... 50%

Door—

Chapin-Stephens Co..... 50@50&10%

Plane—

Chapin-Stevens Co..... 20%

Straps— Box—

Acme Embossed, case lots.. 20&10&10%
Cary's Universal, case lots... 20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points..doz. 55¢
All Steel Socket...doz. $2.00@2.25
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00.... 20%

Stuffers, Sausage—

Enterprise Mfg. Co..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co..... 40&10&5%

Sweepers, Carpet—

	℔ doz.
Bissell Carpet Sweeper Co.:	
Superba, Cruich Mahogany	$36.00
Triumph, Fancy Veneers	$33.00
Parlor Queen, Fig. Rosewood	$30.00
Elite, Hungarian Ash	$29.00
Am. Queen, Fig. Mahogany	$27.00
Ideal, Bird's-Eye Maple	$25.00
Grand Rapids, Nickel, $24.00; Japan	$22.00
Standard, Nickel, $22.00; Japan	$20.00
Crown Jewel, Nickel, $21.00; Jap.	$19.00
Crystal, Glass Top	$36.00
Grand, 17 in. wide	$36.00
Parlor Grand	$48.00
Club, 24 in. wide	$54.00
Hall 28 in. wide	$60.00

NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five dozen lots.

Tacks, Finishing Nails, &c.

American Carpet Tacks...90&40%
American Cut Tacks.....90&40%
Swedes' Cut Tacks.....90&40%
Swedes' Upholsterers'....90&50%
Gimp Tacks.....90&50%
Lace Tacks.....90&50%
Trimmers' Tacks.....90&40%
Looking Glass Tacks.....65%
Bill Posters' and Railroad Tacks, 90&50&10%
Hungarian Nails.....80&20%
Finishing Nails.....70%
Trunk and Clout Nails...80&10%

NOTE.—The above prices are for Straight Weights.

Miscellaneous—

Double Pointed Tacks, 90&6 tens@—%
Se also Nails, Wire.

Tanks, Oil and Gasoline—

Wilson & Friend Co.:

Gal.	Gasoline	Oil
30	$2.75	$3.00
60	$3.50	$4.00
110	$5.00	$5.75

Tapes, Measuring—

American Asses' Skin....50@—%
Patent Leather.....25@30&5%
Steel .....33⅓&5%
Chesterman's .....25@25&5%
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin.....40&10@50%
Metallic .....30@30&5%
Patent Bend, Leather...25&5@25&10%
Pocket .....40@40&5%
Steel .....33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. 25%
Chesterman's Steel, No. 1038L, etc. 35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb.....$2.55@$2.80

Thermometers—

Tin Case, Cabinet, Flange, Dairy, &c.....30@35%

Ties, Bale—Steel Wire—

Single Loop.....82½&10%
Monitor, Cross Head, &c. 70&2½%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White.....20@20&5%

Haying—

Myers' Hay Tools..... 45%

Ice Tools—

Gifford-Wood Co..... 15%

Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated.....$2.00

Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved.....33⅓%
Simonds' Crescent..... 25%

Ship—

L. & I. J. White..... 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz., $1.15@$1.25; gro....$11.50@12.00
Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida.....75@10%
Newhouse .....40@40&5%
Hawley & Norton..... 65%
Victor .....75@75&10%
Oneida Community Jump..... 50%
Hector .....75@75&10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes, 12¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ℔ doz., $13.25...$11.50 doz.
No. 3, Rat, ℔ doz., $6.50...$5.75 doz.
No. 3½, Rat, ℔ doz., $5.25. $4.70 doz.
No. 4, Mouse, ℔ doz., $3.85. $3.00 doz.
No. 5, Mouse, ℔ doz., $3.00. $2.25 doz.
Oneida Community:
Out o' Sight, Mouse, ℔ doz.....$0.60
Out o' Sight, Rat, ℔ doz..... 1.25
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... 1.00
Wood Choker, Rat, ℔ doz. holes. .12
Premier Tin Choker, 5 hole, ℔ doz. traps..... .75

Trowels—

Disston Brick and Pointing..... 25%
Disston Plastering..... 20%
Disston "Standard Brand" and Garden Trowels..... 30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels.. ℔ gro. $6.00
Woodrough & McParlin. Plastering. 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 60&10%
Handy Trucks..... ℔ doz. $16.00
Grocery ..... ℔ doz $15.00
McKinney Trucks..... each, net $10.00
Model Stove Trucks..... ℔ doz $18.50

Tubs, Wash—

M'f'gr's list, price per gross.

No.	0	1	2	3
Galvanized.	$67	$79	$89	$99

10&7½ &5&5%

Twine, Miscellaneous—

Flax Twine:
No. 9, ¼ and ½-lb. Balls. 21@23¢
No. 12, ¼ and ½-lb. Balls. 19@21¢
No. 18, ¼ and ½-lb. Balls. 16@18¢
No. 24, ¼ and ½ -lb. Balls. 15½@17½¢
No. 36, ¼ and ½-lb. Balls. 15@17¢
Chalk Line, Cotton Balls .....24@29¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz.....8½@19¢
Cotton Wrapping, 5 Balls to lb. according to quality..13½@19¢
American 2-Ply Hemp, ¼-lb. Balls.....12½@15¢
American 3-Ply Hemp Balls .....13¼@16¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine)...7½@9¢
India 3-Ply Hemp, 1-lb. Balls 7½@9¢
India 3-Ply Hemp, 1½-lb. Balls. 7@8½¢
2, 3, 4 and 5-Ply Jute, 1¼-lb. Balls .....9@11¢
Mason Line, Linen, ¼-lb. Bls. 17¢
No. 26½ Mattress, ¼ and ¼ lb. Balls, according to quality. 30@60¢
Wool, 3 to 6 ply....B 6¢; A 7½¢

Vises—

Solid Box.....50&5@50&10&5%

Parallel—

Athol Machine Co.:
Simpson's Adjustable..... 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co..... 40%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00.
Fulton Mach. & Vise Co.:
Reed, Swivel..... 25%
Star, Solid Jaw..... 40%
Hollands':
Machinists' .....40@40&5%
Keystone .....65&5@70%
Lewis Tool Co.:
Adjustable Jaw..... 30%
Monarch, 50%; Solid Jaw..... 50%
Massey Vise Co.:
Clincher 40%
Perfect, 15%; Lightning Grip..... 15%
Merrill's 20%
Millers Falls Oval Slide Pattern. 60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's .....40@45%
Combination Pipe..... 55@60%
Prentiss .....20@25%
Rock Island..... 25%
Snediker's X. L..... 33⅓%
Stephens' 33⅓%

Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps..... 30%
Perfection Saw Clamps, ℔ doz....$4.50
Reading 60%

Wood Workers—

Fulton Mach. & Vise Co.:
Reed 25%
Star 40%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe..... 25%

Wads—*Price per M.*

B. E., 11 up.....60¢
B. E., 9 and 10.....70¢
B. E., 8.....80¢
B. E., 7.....80¢
P. E., 11 up.....$1.00
P. E., 9 and 10..... 1.25
P. E., 8..... 1.50
P. E., 7..... 1.50

Dis. 15%

Ely's B. E., 11 and larger.$1.70@1.75
Ely's P. E., 12 to 20....$3.00@3.25

Ware, Hollow—Cast Iron, Hollow—

Stove Hollow Ware:
Enameled .....45&10%
Ground .....50&5%
Plain or Unground.....60%
Country Hollow Ware, per 100 lbs .....$2.75@$3.00
White Enameled Ware:
Maslin Kettles.....65&10%
Covered Wares:
Tinned and Turned.....35&10%
Enameled .....45&10%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware.....33⅓%
Iron Clad Ware..... 70&10%
Lava and Volcanic, Enameled..40&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45¢	50¢	55¢	65¢

Steel Hollow Ware—

Avery Spiders and Griddles..65@65&5%
Avery Kettles..... 60%
Porcelained .....50&5@50&10%
Never Break Spiders and Griddles. 65&5%
Never Break Kettles..... 60%
Solid Steel Spiders and Griddles. 65&5%
Solid Steel Kettles..... 60%

Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

Washboards—

Solid Zinc: ℔ doz.
Crescent, family size, bent frame. $4.05
Red Star, family size, stationary protector $4.05
Double Zinc Surface:
Saginaw Globe, family size, stationary protector..... $3.55
Cable Cross, family size, stationary protector..... $3.60
Single Zinc Surface:
Naiad, family size, open back, perforated $3.00
Single Saginaw Globe..... $2.85
Brass Surface:
Brass King, Single Surface, open back $4.05
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.60
Glass Surface:
Glass King, Single Surface, open back $3.95
Enamel Surface:
Enamel King, Single Surface, ventilated back..... $3.95

Washers—Leather, Axle—

Solid .....90@90&10%
Patent .....90@90&5%
Coil: ⅞ 1 1⅛ 1¼ *inch.*
℔ 10¢ 11¢ 13¢ *per box.*

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$4.65 3.75 2.45 2.25 2.05
The above prices are based on $6.75 off list.
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½-inch, barrel lots, per lb. 1½@1¾¢

Wedges—

Oil Finish.....lb., 2¼@2¾¢

Weights—Hitching—

Covert Mfg. Co..... 30&2%

Sash—

Per net ton, f.o.b. factory:
Eastern District.....$21.00@—
Western and Central Districts .....$20.00@$22.00

Wheels, Well—

8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.

Wire and Wire Goods—

Bright and Annealed:
6 to 9.....72&10&7½%
10 to 18.....72½&10&10%
19 to 26.....75&10&10&2½%
27 to 36.....77½&10&7½%
Galvanized:
6 to 9.....72½&10%
10 to 14.....72½&10&5%
15 to 16.....72½&10&5%
17 to 18.....72½%
19 to 26.....70&5&2½%
27 to 36.....65&10&10%
Coppered:
6 to 9.....65&10&10%
10 to 14.....70&10&5%
15 to 18.....65&10&10&10%
19 to 26.....70&5&2½%
27 to 36.....72½&10&2½%
Tinned:
6 to 18.....67&10&10%
Brass .....15½¢ lb., base
Copper .....15¢ lb., base
Cast Steel Wire..... 50%

Spooled Wire—

Annealed and Tinned..... 75%
Brass and Copper..... 70%
Retailers' Assortments, per box. $2.00@$2.25
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Steel Wire Goods.....90&10%
Brass Wire Goods.....90&10%
Brass Cup and Shoulder Hooks, 85&10%

Wire Cloth and Netting—

Galvanized Poultry Netting, 80&2½@80&7½%
Painted Screen Cloth, 100 ft., $1.35
Standard Galv. Hardware Grade: 100 ft. rolls, 2½ to 48 in. wide, Per 100 sq. ft.
Nos. 2, 2½ and 3 Mesh....$2.75
Nos. 4 and 5 Mesh.....$3.00
No. 6 Mesh.....$3.25
Nos. 7 and 8 Mesh.....$3.75

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural .....80&10&10%
Alligator or Crocodile..70&10@75%
Baxter Pattern S Wrenches 70&5@70&10%
Drop Forged S.....45@45&5%
Acme ..... 60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%.
Steel Handle Nut..... 50%
Combination Black..... 40&5%
Merrick Pattern..... 50%
Boardman's 40%
Coes' Genuine Knife Hdl...40&10&5&5%
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5%
Donohue's Engineer..... 40&10%
Eagle 70%
Gem Pocket..... 30%
Hercules 70%
W. & B. Machinist:
Case lots..... 50&5%
Less than case lots..... 50%
W. & B. Railroad Special:
Case lots..... 50%
Less than case lots..... 40&10&5%
Solid Handles, P., S. & W..50&10%; full cases..... 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain..... 50%
Stillson 65%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5%
Other Wrenches..... 50%
Vulcan and Agrippa Chain..... 50%
Whitaker Machinists':
Case Lots..... 50&10%
Less than case lots..... 50%

Fruit Jar—

Beni. P. Forbes, Triumph, ℔ gro., $7.50; per doz..... $0.90

Wrought Goods—

Staples, Hooks, &c., list March 17, '02.....90@—%

Zinc—(*Cask lots at mill.*)

Sheet.....per 100 lb., $7.00